Situational Analysis of Women Water Professionals in South Asia

August 2009

Study Coordinated by
SOPPECOM, India

Supported by
The Crossing Boundaries Project
SaciWATERs, India

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South Asia Co-ordination Team

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This has been a short exploratory study on women water professionals in south Asia.

The study was planned as part of the larger project of SaciWATERs titled "Crossing Boundaries". The main aim of this short exploratory study was to look at the less understood area of women water professionals and their concerns.

We hope that as a research team from Bangladesh, India, Nepal, Sri Lanka and later Pakistan we have been able to raise a few pertinent questions in this respect.

There would have been a glaring gap in the study without the special report on Pakistan from Ms. Shaheen Ashraf Shah. We therefore, extend special thanks to her.

The study would not have been possible without the initiative of SaciWATERs and we would especially like to mention here Dr. Peter Mollinga, Convener SaciWATERs; Dr. N C Narayanan, the then Director of the SaciWATERs, who requested SOPPECOM to co-ordinate the south Asia study; Dr. Dibya RatnaKanaskar the present Director of SaciWATERs and Dr. Anjal Prakash, Senior Research Fellow SaciWATERs for their continued support.

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We do hope that the report would generate interest in this issue.

South Asia Co-ordination Team

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List of abbreviations

AP	Andhra Pradesh
APSIDC	Andhra Pradesh State Irrigation Development Corporation
BCAS	Bangladesh Centre for Advance Studies
BWDB	Bangladesh Water Development Board
CADA	Command Area Development Authority
CBO	Community Based Organization
CEGIS	Centre for Environmental and Geographic Information Services
DPHE	Department of Public Health Engineering
FGD	Focused Group Discussion
GSDA	Groundwater and Survey Development Agency
GWD	Ground Water Department
HMWSSB	Hyderabad Metropolitan Water Supply and Sewerage Board
IWM	Institute of Water Modeling
IWRM	Integrated Water Resource Management
LGED	Local Government Engineering Department
MJP	Maharashtra Jeevan Pradhikaran
NGO	Non Government Organization
RSPMU	Reform Sector Project Monitoring Unit
SaciWATERs	South Asia Consortium for Interdisciplinary Water Resource Studies
SOPPECOM	Society for Promoting Participative Eco-system management
SIDA	Sindh Irrigation and Drainage Authority
WARPO	Water Resources planning Organization
WRD	Water Resources Department
WSSD	Water Supply and Sanitation Department
WWP	Women Water Professional

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Introduction

In the last decade or so there has been an increasing interest on the question of gender and water. The interest emanates partly because women's movements and struggles have made a mark and equally because many funders have come to insist on its inclusion. It is these reasons that compel the state to address some of the inequities and disadvantages that women face. However there is little attention given to the theoretical treatment of this issue in the water sector and hence most of the efforts at making the water sector inclusive become mere lip service or remain partially addressed. This is evident from the knee jerk introduction of programmes in the sector, which seek women's participation in community based domestic water programmes. Moreover, most of these programmes remain focused on the poor rural women and their collectives to regenerate and effectively manage the resource. Little research has been done in the area of the professionals who are in the key decision making or implementing organizations/posts in both the bureaucracy and otherwise and how their actions or inactions set the agenda for policy and programme in the water sector. Further, there is little thought given to the women who work as water professionals in the different subsectors of water and their constraints and positive influences on the sector as a whole. By women water professionals (WWPs) we simply mean women who are employed in the water sector in different capacities.

Are these institutions/organizations at the macro level democratic? Is the environment in these organizations congenial for women to participate effectively? - are some of the questions that largely remain out of the debates on gender and water.

Our insights from the literature on gender and water point to a clear sectoral divide, which separates the domestic from other productive uses of water. Women's participation in water sector is therefore synonymous to their participation in the domestic arena, which in fact is an extension of their domestic roles. This clearly points to a thinking, which is strongly embedded in the male culture of the sector. However it is then important to carry these insights further to understand how it shapes the water sector as a whole. It also strongly points to the inadequacy of action at the community level alone. It builds a case for engendering the water sector as a whole.

It is in this context that a study on WWPs becomes critical. While reiterating the need for a much deeper theoretical treatment of the question we feel there is a need to look at women at various levels in the water sector. As a first step this means unpacking the sector and developing a typology of women as users and planners.

The present study is an effort to do just that. It is part of a larger project initiated by SaciWATERs called the 'Crossing Boundaries' (CB), which focuses on education, research/innovation, knowledge based development and networking, in a combined effort to contribute to a paradigm shift in water resources management in South Asia. This focus on longer duration education input (as opposed to short term training) derives from the fact that shaping attitudes and perceptions, and teaching the skills of interdisciplinary and more comprehensive analysis and intervention requires time. The project is implemented by a group of institutions with a proven interest and track record regarding integrated, interdisciplinary and gender-sensitive approaches to water resources management. The project duration is five years and will run from 2006 to 2010.

The general objective of the project is to strengthen integrated and gender-sensitive water resources management policy and practice in South Asia by means of a regional, collaborative, partnership-based capacity-building programme for active water professionals through higher education, innovation-focussed research & knowledge base development, and networking.

The present study is located in Bangladesh, India Nepal, and Sri Lanka, and primarily is of an exploratory nature to understand the profiles, numbers and constraints of WWPs in the South Asian region. Although the focus has been to primarily look at women professionals in the water bureaucracy, we have spoken to a few WWPs from NGOs and academic groups as gender water advocates.

We also bring in a few insights from the Sindh province in Pakistan where secondary data was collected and a few discussions were conducted with WWPs in the Sindh Irrigation and Drainage Authority (SIDA).

The South Asian Water Scenario

Both droughts and floods characterize South Asian water scenario. The question of water scarcity and better governance looms large across the region. All of these countries have, in the recent ten years introduced various reforms and policies in the water sector. Many of these policies mark a shift of the water sector paradigm from a techno-centric supply driven model to a demand driven and participatory model. With this shift in thinking, questions of participation, accountability, inequity have come to the fore and inadvertently 'politics of water' has gained currency.

Interestingly while many of these policies and reforms have provided spaces for resource poor groups to participate in decision making and planning around the water resources at the micro level, the picture seems just the opposite at the macro level with large numbers of poor being displaced from their habitats or dispossessed

of their resources including water. Goals of decentralized planning and management and that of privatisation are being pursued simultaneously in this region with varying impacts.

Integrated Water Resources Management (IWRM) as a concept has gained currency in the last decade or so and this model is being strongly advocated in the region, but hardly creating the desired impact on the water bureaucracy. The 'best outcomes' of this advocacy have been in the form of renaming of the sectoral departments as water resource departments in some countries. However, the water bureaucracy largely continues to function as it did in the past with its various sub-sectors barely seeing eye to eye with each other.

Admittedly new reforms and policies have at least paid lip service to gender concerns at the micro level, however they have not gone into the detailing of how that would be feasible. Despite these policy spaces, gender mainstreaming in the sector has become a mere lip service and the answers for this have to be sought at different levels.

In all these countries water is clearly a male dominated sector and the manifestation of this is in the low numbers of women found in the water sector as a whole both in the bureaucracy and otherwise

Much of the policy analysis from a gender lens shows us that gender justice receives little attention at macro-meso-micro levels. Much of the unpacking of how gender justice can be brought about in the sector would increasingly reveal just how much of work is needed at the level of those who design and implement water programmes or respond or act as civil society groups.

In this study, we try and look at the less studied sector of WWPs in the water bureaucracy. What are their numbers and why are they so few? what are their concerns and does their presence make any difference to the gender mainstreaming agenda?; does reform in policy bring any more visibility to their concerns, does it provide them any more space than it did in the past and does this space lead to fruitful outcomes in terms of gender equity. These and other related questions define the scope of our study.

Objectives and Scope of the Study

This is a short-term exploratory study and the main aim is to understand why there are such few WWPs and what are their key areas of concern.

At the outset, we would like to mention that the study was done in two phases. In the first phase, independent studies for Nepal and Sri Lanka were done in 2008. In the second phase, a co-ordinated study was initiated for Bangladesh and India between January- July 2009. The objectives and scope of studies done in both the phases were the same, but the methodology differed to an extent and this is evident in the data presentation done in the report that follows. Although a full fledged study was not done for Pakistan we share here a few insights from one of the provinces of Pakistan where the irrigation reform process was introduced.

The study aimed to

1. Develop a broad typology of WWPs working in the region.
2. Assess the numbers of these women in the area studied to give an indicative trend of the numbers in the region.
3. Understand some of the key constraints of WWPs across the diverse cultures of South Asia
4. Bring visibility to this group and their concerns.
5. State recommendations for policy and action for WWPs

Scope of the Study

The study covers a few water departments in the four countries of Bangladesh, India, Nepal and Sri Lanka.

In **Bangladesh**, overall management of water resources related to irrigation, flood control and drainage comes under the Ministry of Water Resources. Under this Ministry, there are different institutions/organizations, which are responsible for water resources management. We have considered seven of them, i.e. Bangladesh Water Development Board (BWDB), Water Resources Planning Organization (WARPO), Institute of Water Modeling (IWM), Centre for Environmental and Geographic Information Services (CEGIS), Department of Public Health Engineering (DPHE), Local Government Engineering Department (LGED) and Bangladesh Centre for Advance Studies (BCAS).

BWDB is responsible for the overall planning and implementing of the Water Resource Development (WRD) projects in Bangladesh. There are seven zones, and each zone is divided in Circles and further into Divisions and Subdivisions.

WARPO is a macro level planning organization for WRD. Its main task is to provide master plan for environmental friendly WRD, and also formulate National Water Policy and plan for scientific use and preservation for water resources. This is located at the centre- Dhaka.

IWM is a specialized institute for water modeling, computational hydraulics and scientific research, development and capacity building. CEGIS is a public trust in the water sector. CEGIS provides support for environmental and social impact assessment of different water resources related projects. Both these Institutes operates from the centre- Dhaka.

DPHE comes under Ministry of Local Government and Rural Development. It is responsible for water supply and sanitation. Other than Irrigation Water Management, DPHE is responsible for drinking water supply to urban and rural community. It has a Head Quarter office and further the district level offices. LGED also comes under Ministry of Local Government and Rural Development. It is responsible for irrigation of 1000 ha of land or less in local level water management. It has one head quarter in Dhaka then district level and sub-district level implementing authorities.

In **India**, we have conducted the study in two states, **Maharashtra** and **Andhra Pradesh**, both are large states and in some sense recognised as the leaders in water management. Maharashtra is a western Indian state and Andhra Pradesh is a south Indian state. Both these states have a strong history of women's movement.

For the state of **Maharashtra**, we have considered two departments for the study: Water Resources Department (WRD), which is the irrigation department and Water Supply and Sanitation Department (WSSD), which concerns drinking water and sanitation. Both the departments have their head offices at Mantralaya in Mumbai, the State capital.

After the recent legislation of 2005 in Maharashtra the entire state has been divided into five river basin corporations. These are governed by the WRD. Under each river basin corporation there are different region wise irrigation circles, project wise irrigation circles and Command Area Development Authorities (CADA). Including all these, there would be around 35 irrigation offices in the state of Maharashtra. Further, there are different divisions and subdivisions under each Circle.

There are three main components of WSSD, i.e. Maharashtra Jeevan Pradhikaran (MJP), Groundwater and Survey Development Agency (GSDA), and Reform Sector

Project Management Unit (RSPMU). For the present study, we have considered MJP and RSPMU.

MJP is responsible for designing and construction of water supply (costing more than INR 75 lakhs) in rural areas and sewerage schemes in urban areas and mobilisation of resources on behalf of State Government and the local bodies. Recently due to various reasons, it has been criticized as being a white elephant of the government, and there are active efforts for the restructuring of MJP. MJP has its Head Office at Mumbai. There are five regions across state, further divided into different circles, divisions and subdivisions under each Region Office.

RSPMU deals with execution of Jalswarajya (water freedom) scheme in the state. Jalswarajya is the drinking water scheme, introduced under the Sector Reform funded by the World Bank. This process introduces the change in the water sector and hence of importance for the study. RSPMU has their Central office at Mumbai. They have district levels team in all the districts, where Jalswarajya scheme is being executed. These teams include members of technical, social administrative and financial side.

For the state of **Andhra Pradesh (AP)**, we have considered four departments, i.e. Irrigation and Command Area Development Department (Irrigation and CAD), Andhra Pradesh State Irrigation Development Corporation (APSIDC), Ground Water Department (GWD) and Hyderabad Metropolitan Water Supply and Sewerage Board (HMWSSB).

The Department of Irrigation provides irrigation facilities with the funds provided by Government under various programs. There are different circles under the main office.

APSIDC is a State Government undertaking formed for the development and implementation of irrigation projects in the State. This department comes under administrative control of Irrigation and CAD Department. The main office is located in Hyderabad, which is the state capital, and there are twelve Divisions and two Project Offices for implementation of various schemes in state of AP.

As like APSIDC, GWD also comes under administrative control of Irrigation and CAD Department. The Ground Water Department was established to help the scientific development, systematic management and optimal monitoring of groundwater resources for sustainability. It is a multi disciplinary organization. Ground Water Department consists of a Directorate, twenty two District Offices and two Special Command Area Offices.

HMWSSB comes under the Municipal Administration and Urban Development Department. The Board is responsible for planning, design, construction,

maintenance, operation & management of sewerage treatment works and potable water supply in Hyderabad Metropolitan Area.

In **Nepal**, the study focuses on women water managers at field level, interviews with water professionals both male and female working at academia, implementing agencies i.e. irrigation department and drinking water department, society of engineers and donor agencies on water sector.

In **Pakistan** like the rest of south Asia, water sector is a male dominated one. Women's employment was introduced in 2004, under World Bank financed water reform program. Sindh Irrigation and Drainage Authority (SIDA) is an organization working for water reforms in Sindh Province. The Sindh Assembly passed the SIDA Act in 1997. As a result of the Act, the Sindh Irrigation and Drainage Authority (SIDA) was established in 1998. Later SIDA Act was replaced by Sindh Water Management Ordinance, promulgated in 2002, sets the stage for a complete rollout of the reform program. The key elements in the proposed reform are the transformation of the Irrigation and Power Department (IPD) into autonomous organizations and irrigation management transfer to users. The reformed framework envisions farmers' participation to increase accountability, transparency and equity.

Currently women are working for different departments of SIDA, mainly in secretariat including field offices. All employees (male and female) working for reform program are contractual employees, but organization itself plays the role of prime change agent for water reforms in the province and having multi disciplinary team rather than only engineers

In **Sri Lanka**, the study focuses on two departments. These were the Department of Irrigation and the National Water Supply and Drainage Board. The former, a government department, has an island wide presence and possibly employs the largest number of women on and off the field. The latter is a statutory board established by the government, also with an island-wide presence, but without the same rigid structures of administration as a department.

Methodology and Tools

Definitions, analytical framework, understanding of the issue

Broadly, we define WWPs as all women working in the water sector at the meso and macro levels across different sub-sectors of water in different capacities in government as well as non-government organizations, as academicians and in the private sector.

For the purpose of this study, however we have focused on women working as employees in the government set-up both in technical and non-technical capacities at different positions.

A combination of factors all commonly linked to patriarchy determines women's presence or the lack of it in the water sector. These could broadly fall in two terrains- patriarchy within organisations and masculine character of the sector itself, which can be described both by its content and by mode of operation. The present study being an exploratory one hopes to only provide insights into these two broad areas.

For this study we therefore rely heavily on the foundational work in the area of feminism and science. We also draw on work around gender and organizations, and the studies on masculinities, particularly work done by Margreet Zwarteveen (2008) in the area of water and masculinities.

The low numbers of women in the water sector or for that matter, any of the 'hard' sciences often remains an area wanting in research. The most general explanation given for this is patriarchy without going into the nature of these sciences themselves. Most often, the question is either treated as a myth not requiring an enquiry or self-evident or non-sensical i.e falling outside the domain of the formal knowledge systems and hence needing no attention. If we look at most other disciplines like music , art which can be termed as culturally validated endeavors too have historically been the domain of men, but only few really get associated with masculinity- so large numbers of famous painters and poets are male, but the form of art is never described as masculine as against science and technology.

According to Keller (1978) this unexamined association between gender and science has been internalized as a belief system, into peoples' thinking and value systems. These values and the belief system then gets further perpetuated through the various socio cultural practices to an extent that we stop questioning the content and the form of the hard sciences themselves and find reasons for women's absence outside of it.

Feminism and Science

The natural sciences have assumed unparalleled authority in the 20th century. The feminist critique of science has come from a wide range of disciplines. Feminists have largely seen the rise of the modern western science as a gendered process. For example the Baconian view of nature being seen within the feminine domain and needing to be controlled and gained mastery over has come under sharp criticism from feminist scholars. It has been interpreted as a gendered process of knowledge production which is reflected in the low presence of women as the part of the scientific community.

Feminist and environmental movements have been raising these questions and demonstrated that scientific advancements and technologies have largely contributed to subordination of women and degradation of the environment.

What kind of knowledge do these sciences provide us and what is the basis of their cognitive authority? Feminists have questioned the idea of objectivity and subjectivity and the separation of the knower from the knowable. These challenges have become prominent in the post 60s when Kuhn[1] (1962) and others questioned the idea of objectivity in science. They showed that science was a part of the social and cultural context in which it is developed and practiced. Sandra Harding (1986) and others showed that all knowledge is produced under specific social and historical conditions and they must be understood to give us insights into more truthful accounts. She uses the three useful concepts of symbolism, structure and identities in the context of gender and science. She talks of the use of symbols or metaphors that are used to describe gender dichotomies and separate the public from the private domain. For example, the dichotomy between production and reproduction- These are used to organise a set of gendered activities, by this logic women would do all the activities that revolve around reproduction, and men move into the production sphere. This can thus be referred to as the structure, and finally individual identities are constructed around these activities and these are essentially gendered. These identities are internalised as part of our belief systems and determine our practices and ideas. Anything that falls in the realm of the public for example gets defined as male. Objectivity, rationality or technical competences thus get to be seen as male traits and its lack as a female one.

[1] Thomas Kuhn (1962) In his *The Structure of Scientific Revolution* argued that science does not progress via a linear accumulation of new knowledge, but undergoes periodic revolutions, also called "paradigm shifts" in which the nature of scientific inquiry within a particular field is abruptly transformed. Both he and later Karl Polyani believed that scientists' subjective experiences made science a relativistic discipline and that science gets developed and practiced in a social context.

Another seminal work, which informs this study, is that of Evelyn Fox Keller (1978) who draws on psychoanalytical theories expounded by Freud, Piaget and others. She has through her work tried to trace the origins of the gendered nature of science.

Keller's main enquiry revolves around the low numbers of women in science particularly engineering and physics. However, her concern throughout this exploration is less on the relative absence of women in science but more on the structure of science, which she argues, is in fact the cause for this absence.

She therefore strongly argues for a discussion on 'beliefs' over a 'reality' (absence of women as scientists). This belief manifests itself through direct references, which until very recently were not uncommon to hear. Women it was said are among the most unfit species to understand science. Clarity of mind, rational thinking and rigour were all identified as male characteristics that were most suited for pursuing a scientific endeavor. They manifest through language and metaphor to describe science itself. Often objective sciences are referred to as 'hard' sciences and the subjective ones as 'soft'. Similarly facts are always most objective and rigorous when they are 'hard' and feelings are always 'soft'. In each of these instances 'hard' obviously has a male connotation and 'soft' has a female one.

What she effectively demonstrates is how such language, imagery and metaphor slowly but surely shapes realities.

The continuing exclusion of women scientists in the disciplines such as engineering and physics is argued by many scientists of reflecting not only gender bias but also institutionalization of male bonding which render such disciplines particularly inhospitable for women scientists. In fact, some feminist historians go as far as saying that the very definition of scientific genius remains an essentially masculine trait, some others challenge these positions by saying that these are further inhibiting the process of change by perpetuating gender stereotypes. Within the feminist critiques of science one sees a debate of those who are seen as anti-science as it is seen as anti-feminist and those who see a positive role of science and conceptualise subjectivity and objectivity as different from the mainstream Baconian and Cartesian views of science.

Another useful concept developed in the 1980s is that of 'hegemonic masculinity' and it helps us move beyond a singular understanding of masculinity or femininity. The idea of hegemonic masculinity gained currency in the 1980s when challenges came up to the idea of masculinity which no longer could be understood as a singular concept. The argument that there are multiple masculinities and that they manifest themselves in different ways was acknowledged. Hegemony, a concept so powerfully introduced by Gramsci was then used to explain certain kinds of

masculinities which were linked to power derived from social locations of caste, class, race, age religion etc. Hegemonic masculinity thus looks at masculinity from a broader understanding of the various layers that affect and intersect gender relations. This concept helps us understand why certain social groups alone and within them only men have been able to dominate knowledge production and its practice. It helps us look at patriarchy in a much more nuanced way, with the way it intersects with other social groups and creates what can be referred to as hegemonic masculinity.

Gender and Organisations

The other terrain of patriarchy and organisations that we hope to examine here is largely informed by the work in the area of gender and organisations. Of particular importance, here is the work of Joan Acker (1990) which showed that organizations cannot be seen as gender neutral and need to be seen as sites in which the gender identities are presumed and reproduced. She defines a gendered organization where "advantage, disadvantage, emotion and action, control and exploitation, meaning and identity are patterned through and in terms of distinction between male and female, masculine and feminine". Her work brought out that hierarchical organisations are an important location of male dominance and countered the view that organisations are gender neutral. Assumptions about gender underlie the documents and contracts used to construct organizations and to provide the commonsense ground for theorizing about them (Acker 1990).

Kathy Fergusson's (1984) work on bureaucratic organizations is also worth noting in this regard where she argues that ideal typical bureaucratic form is inherently gendered in that both the structure and mode of operation lead to a gendered effect. She then calls for a restructuring of the bureaucratic organisations to make them more gender sensitive and equal.

Sources of Data and Tools

Different sets of tools and methods were used to investigate into this question. Here again we would like to reiterate that the studies in Nepal and Sri Lanka were done at a different time and by independent researchers so the choice of methods did differ from the studies that were done in India and Bangladesh where the study was co-ordinated by SOPPECOM[2].

[2] Society for Promoting Participative Eco-system Management (SOPPECOM), Pune, India is an organisation working in the area of rural livelihoods and natural resources. Its prime focus is on water in which it does policy advocacy, research and capacity building.

In **Bangladesh and in India,** the study was conducted at the same time and through an intensive consultative process. In both these countries, our focus was largely on looking at the WWPs in the government set-up. We have drawn information from both secondary and primary sources. As discussed earlier, in India the study was done in the two states - Andhra Pradesh and Maharashtra. Between these two states a total of fifty two women were interviewed and about eight focus group discussions (FGDs) were done with different groups. Secondary information in India was collected through the right to information channels from the websites of different departments as well as through visits to the offices and through written correspondence with them. The details of the primary data collected are mentioned in a section on profiles of women interviewed.

In **Bangladesh** thirty two women and eighteen men from across the different departments were interviewed in detail and about four FGDs were conducted with different groups of water professionals.

In both the countries men and women belonged to the Government departments and came from mixed social and educational backgrounds. They were also selected carefully to represent the various positions in the hierarchy they came from.

For both these countries it is important to state here that a large amount of secondary data was collected to give us a picture of how many women are there in the water sector and where they stand in the hierarchy of the sector. All of this data will not be presented in this report, as we will have individual country reports, which would be detailed.

In **Nepal** the study was conducted between April and May 2008. The study includes both case studies from women water managers at field level, interviews with water professionals both male and female working at academia, implementing agencies i.e. irrigation department and drinking water department, society of engineers and donor agencies on water sector. Very specifically the women interviewed for the study were as follows

a) Women graduates who have studied water resources at Bachelor, Diploma and at higher levels in formal education that opens an opportunity to work in water sector,

b) Women who do not have an academic background on water resources as such, but was/is involved in water activities in later phase of her career,

c) Women involved during water policy formulation and implementation,

d) Women researchers in water sector and

e) Women educators teaching water resources at universities and colleges Most of this information collected was part of Phd work of the researcher in Nepal[3].

Data collection tools, such as open-ended interview, e-survey, FGDs and tracing out WWPs from college to work at present were used. Both qualitative and quantitative data were collected.

In **Pakistan**, we did not do a detailed study, but did one FGD with the SIDA the details of which have already been discussed earlier.

In **Sri Lanka**, too an independent researcher conducted the study. The study was based on published and unpublished sources of information, interviews with key stakeholders and FGDs. Information was obtained from public sector organizations, private companies and local and international NGOs in the water sector employing women professionals.

Twenty five in-depth interviews were conducted with water professionals in Universities, public sector institutions, an international agency and a private sector company. Both women and men involved with the work of women in the water sector were interviewed

Four FGDs were conducted in Colombo (Western Province), Anuradhapura (North Central Province), Peradeniya (Central Province), and Ratnapura (Sabaragamuwa Province). The participants included engineers and technical officers working in the field, supervisors, academics, sociologists, economists, and NGO and CBO activists. Both men and women participated. There were thirty eight participants at the FGDs. The selection of participants gave particular attention to capturing a diversity of view points.

The findings and analysis that follows is based on these diverse sources of data

[3] Study was done by Pranita Bhushan who is currently completing her PhD work under the guidance of Margreet Zwarteveen in Wageningen University NL

Typologies

One of the main aims of the study was to work on the typology of WWPs. WWPs as we have seen in the definition earlier are all the women who work as employees in the water sector in different capacities.WWPs are categorized in a very broad typology and these include the technical as well as the non-technical types. In each of countries studied, we can see some uniformity and some differences. A typical exercise in typology would involve a detailed classification of WWPs working in different types of organisations such as NGOs, INGOs, Government, the academics and even the private sector. That would be an important and interesting exercise where we could map the extent of WWPs and nature of their work and the problems they face across these sectors. While doing this mapping it would also be important to see the caste, class and other social differentials that determine exclusion alongside of patriarchy.

In a NGO set-up or an academic set-up for example, we would find women professionals largely outside the technical domain and more as social experts (gender, community participation etc) or researchers/teachers.

For the present study, we have not been able to do a detailed mapping of this kind across the different types of organisations and have been able to focus on the water bureaucracy alone. Our classification therefore would be applicable to this category only.

In the government set-up, we would typically find the technical and administrative classification as an explanatory one for preparing a typology. However, with the introduction of reforms in the water sector, we see a changing scenario in which a few non technical and non administrative professionals, such as sociologists, biologists or chemists are coming into the sector in active roles. In most countries, they are still outside of the state apparatus.

While compiling the secondary data we found the following categories of women water professionals with some variations in each of the countries.

1. **Technical**: Engineers (both who are working on site and who do table work like designing, scrutiny, sanctioning etc), Hydrologists, geo hydrologists
2. **Technical type 2**: Professionals who are not qualified as engineers but do support in their technical work- like draftsman, assistant draftsman, tracers and lab assistants
3. **Non technical experts/Permanent or Contractual**- with the introduction of the sector reform process an effort to bring in a multi disciplinary team is

seen. Therefore, there are non-technical social and natural scientists. In each of the countries, their position in the state government differs. In India for example all the social sciences employees fall in the contractual category and are not part of the mainstream government set-up. This is also true of Pakistan. In Nepal, Sri Lanka and Bangladesh they are part of the mainstream government set-up.

4. **Administrative**: Those who do administrative work (desk work) like accounts office, clerk, steno, typist, store superintendent etc.
5. **Service staff:** Employees who are not doing administrative work but provide different services (most of these would be what is called Class four employees) like sweeper, driver, cleaner, watchman, labourers, electrician, gardener, lineman, pump operator, wireman etc

There are further classifications possible for each of these categories and in every country that has been different. These depend on the sub sectors in water, the departments within the subsectors, hierarchy of position, educational qualifications, and whether they are permanent or temporary/contractual employees of the government.

However, for presenting the trends we have not gone into each of these separately. In each of our country reports we will give a detailed typology of women as water professionals, but in this report we present before you broadly two categories i.e. technical and administrative. Technical here includes all experts from the natural sciences including engineers, hydrologists, geologists, agricultural scientists (1,2, 3 combined) and administrative includes all clerical jobs and other support staff (combining 4 and 5 categories). The main reason for clubbing this data is the non availability of segregated data in Nepal and for some departments in Bangladesh and India as well.

Table 1 Department wise typology of women water professionals for India, Bangladesh and Nepal

Country	Department	Technical Employees			Administrative Employees			Total Employees		
		Number of total employees	Number of female employees	Percentage of female employees	Number of total employees	Number of female employees	Percentage of female employees	Number of total employees	Number of female employees	Percentage of female employees
India (Maharashtra)	MJP	1429	74	5.18	5122	502	9.80	6551	576	8.79
	Irrigation	933	18	1.93	1390	157	11.29	2323	175	7.53
India (Andhra Pradesh)	APSIDC	267	11	4.12	300	36	12.00	567	47	8.29
	GWD	81	10	12.35	979	72	7.35	1060	82	7.74
	HWSSB	323	13	4.02	53	7	13.21	376	20	5.32
Bangladesh	BWDB	1400	46	3.29	6060	399	6.58	7460	445	5.97
	WARPO	37	2	5.41	17	2	11.76	54	4	7.41
	CEGIS	108	17	15.74	22	1	4.55	130	18	13.85
	IWM	72	12	16.67	15	0	0.00	87	12	13.79
	LGED-SSWRDP	1696	30	1.77	0	0	0.00	1696	30	1.77
Nepal	Department of Drinking Water and Sanitation	35	0	0.00	82	9	10.98	117	9	7.69
	Department of Irrigation	66	1	1.52	80	10	12.50	146	11	7.53

Low Numbers

All of the countries show that a very small number of women are working WWPs in South Asia. The table shows us that except for three departments in India and Bangladesh the percentage of women in technical posts is not more than 5% and in some departments like the irrigation department in Maharashtra and Nepal it is as low as 1.9 and 1.5% respectively. While it might be interesting to pursue this difference across sectors separately, what we see here is the consolidated picture of the water sector in south Asia. The percentages are just slightly better for women in the administrative sections in the water sector. The Bangladesh data for the BWDB includes among its technical staff, sociologists and other non technical experts as well. Interestingly these are included as part of the mainstream government staff. However, in Maharashtra and Andhra Pradesh in India we see a complete absence of sociologists or any other social sciences experts in the mainstream government departments. Though, in a later section we discuss the changing nature of the sector and the introduction of social scientists in contractual capacities, which also marks the entry of more women in the sector. This is also true of Pakistan as is evident from the data on SIDA, which we shall see in a later section.

In Sri Lanka although we do not have a complete data base for the entire country for any of the departments, at the time of the study in the irrigation department the Director General was a male, two of the eight Directors, and seven Deputy Directors were women. Out of 231 irrigation engineers, 41 or 17.4 per cent of engineers were women. The majority of engineering assistants were women. The Department is primarily staffed by engineers and other technical personnel and has no multidisciplinary team even though among its functions are community interface and interaction. Like in most government departments, there is no gender policy although statutory entitlements are available to women workers.

The Glass Ceiling

Charts 1-3 show the posts at which women are currently employeed. These are representative charts of one department each in India and Bangladesh showing women in the technical hierarchy in the MJP (Water Supply and Sanitation Department, Maharashtra, India), the Bangladesh Water Development Board in Bangladesh and the Irrigation and Command Area Development in AP. In all these departments we see that women are not present at the topmost level. In no countries do we see women at the Chief engineer level. Except in AP in India we do not see women even at the superintending engineers' posts. In Maharashtra

we see 2 women in the Executive Engineer's position of which one was promoted just as she was about to retire and the other one is a very dynamic young professional in charge of a division. In Bangladesh too we do not see women in these two posts but we see five of them as executive engineers which is certainly a positive change.

Chart 1 WWPs in BWDB technical hierarchy, Bangladesh (Entire country Data)

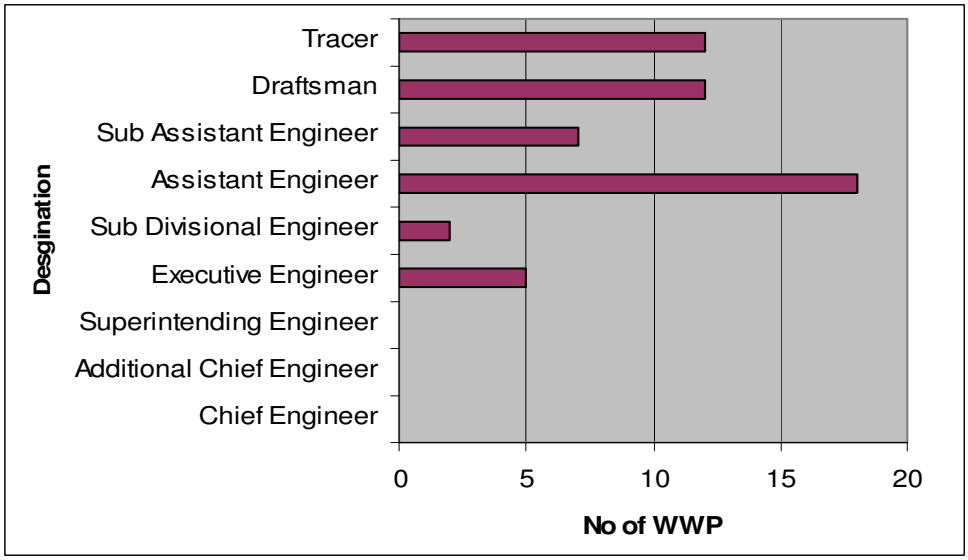


Chart 2 WWPs in MJP technical hierarchy, Maharashtra, India (Entire State level data)

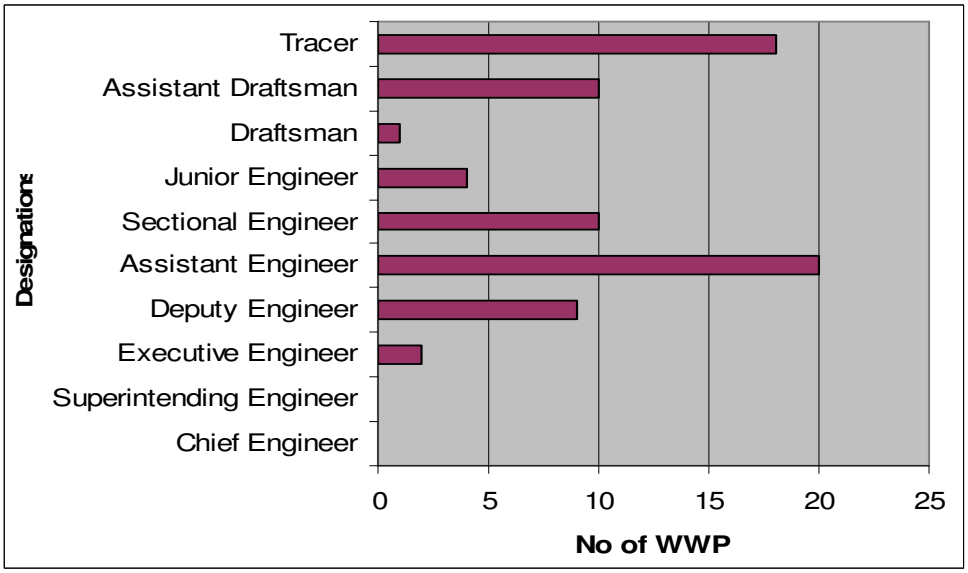
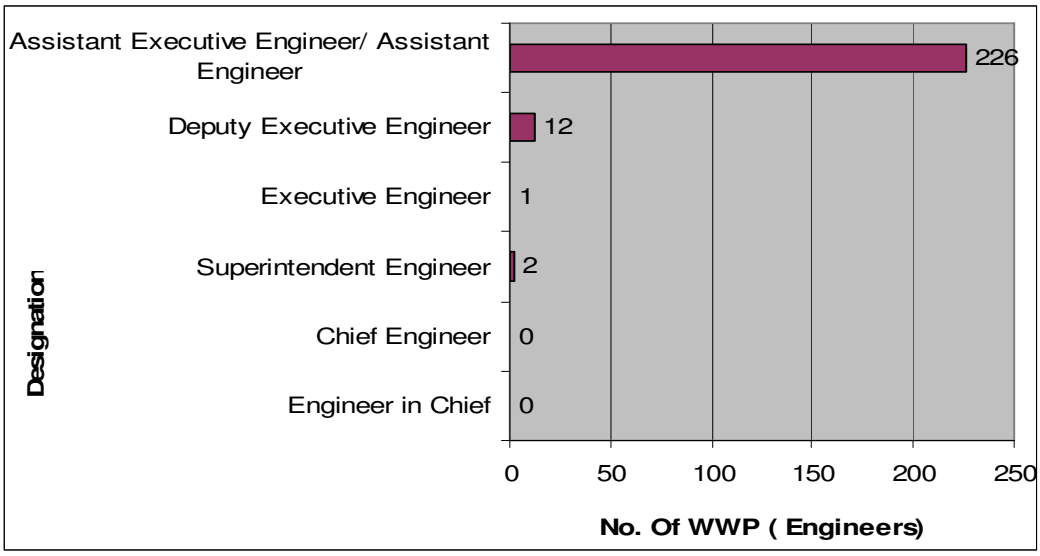


Chart 3 WWPs in APSIDC technical hierarchy, Andhra Pradesh, India (Entire State level data)



It is interesting to see the differences across the three different locations. Andhra Pradesh in India has a large number of women as assistant engineers in the irrigation department and it is the only place which has women in the senior post of Superintending Engineer. However, this is still only 5% of the total employees in the Irrigation and CAD department. Maharashtra is also one of the progressive states in India and as we have seen it has recently introduced a progressive policy of 30% reservations for women in government employment, but the numbers do not reflect that in practice. The main reason cited for this is that there were no recruitments in these departments since the policy was introduced in 1997.

Hesitant but changing profile of the Water Bureaucracy

As we can see, our typologies for the water bureaucracy fit into the categories of technical and administration and hardly have any space for non-technical experts from the social sciences. This is a comment on the nature of the sector, which despite the recent promises of integration and multidisciplinarity is characterised by technocentrism. Changes are being introduced in small and cautious ways and the examples of this are seen in the Pakistan SIDA as well as the Jalswarajya programme of Maharashtra India. This is also seen in Nepal, SriLanka and Bangladesh where one does see sociologists and other social scientists now being employed in the water sector. In some ways it does open up spaces for women to

be employed in the sector as in the current scenario they are more likely to be social scientists than civil or water engineers.

Below we present two tables one from Pakistan and the other from Maharashtra India, which is indicative of the changing scenario in the sector.

Table 2 No of employees, SIDA, Secretariat, Sindh Pakistan

Type	No of female employees	No of male employees	Total no of employees	Comments
Technical and managerial	01	28	29	It includes, MD, GM, Engineers, social scientist specialists, advisors, analysts etc
Administrative and service staff	05 (all Social Organizers)	83	88	Assistants, directors, operators, field social mobilizers, office managers, surveyors
Service Staff	01	23	24	
Total	07	134	141	Women are 5.2% of total employees, based in secretariat

Table 3 No of employees, SIDA, Field Teams Sindh Pakistan

Type	No of female employees	No of male employees	Total no of employees	Work background of professionals
Group leader	00	01	01	Irrigation engineer
Social mobilizers	05	32	37	Social and community mobilization
Administrative and Service Staff	00	18	18	
Total	05	51	56	

The above tables for Pakistan show a very small number of women in the Irrigation department.

In Maharashtra in India, however we see a hesitant change in this regard. A whole new set-up is in place, where social scientists are brought in but all of them are in contractual or temporary posts. The technical persons are mainly deputed from the different water departments. The table below indicates the change in the profile of the water department, but this is only a temporary set-up and after a seven year experience the state government is thinking of dismantling the entire structure of Jalswarajya, retaining therefore only their technical and administrative staff.

Table 4 Women's employment in the sector reform process in drinking water in Maharashtra, India

Status of employment	Details	Technical and Non Technical experts	Administration and Accounts professionals
Permanent employees	No of total posts	208	208
	No of female employees	7	21
	Percentage of female employees	3.37	10.10
Contractual employees	No of total posts	182	26
	No of female employees	22	3
	Percentage of female employees	12.09	11.54

(Data for 26 districts of the state where the programme is currently implemented)

The Women We Spoke To

From across South Asia about one hundred WWPs working in different set-ups were interviewed in detail. The table below gives a quick profile of these women. These women were selected on the basis of their hierarchy, nature of work and in the Indian context on the basis of their caste. Each of the country reports will provide the details in terms of the diversities captured in the study.

Table 5 Typology of WWPs interviewed, South Asia

Country	Technical	Administrative	Non technical experts	Academicians	Total
India (Maharashtra)	18	10	7	0	35
India (Andhra Pradesh)	13	8	2	0	23
Bangladesh	11	14	4	3	32
Nepal	NA	NA	NA	NA	7
Sri Lanka	NA	NA	NA	NA	25
Total					122

Table 6 Department wise number of WWPs interviewed, South Asia

Country	Department	No of WWP
India (Maharashtra)	MJP	11
	Irrigation	15
	Jalswarajya	9
India (Andhra Pradesh)	Irrigation and CAD Department	10
	CDO	2
	APILIP	1
	APSIDC	2
	GWD	4
	HMWSSB	4
Bangladesh	BWDB	10
	IWM	6
	CEGIS	3
	WARPO	3
	LGED	3
	DPHE	3
	BCAS	1
	Others (Academician, Research org)	3
Nepal	Government, NGO, academic	7
Sri Lanka	Government departments, academicians, private sector and NGOs	25
Total		122

Age and Education profiles

Table 7 Age profiles of WWPs interviewed, India and Bangladesh

Age	India (Maharashtra)	India (Andhra Pradesh)	Bangladesh	Total
20- 25	0	3	0	3
26- 35	16	6	21	43
36- 45	9	5	9	23
46 and above	10	9	2	21
Total	35	23	32	90

Table 8 Education profiles of WWPs interviewed, India and Bangladesh

Education	India (Maharashtra)	India (Andhra Pradesh)	Bangladesh	Total
SSC	0	0	2	2
HSC	0	2	0	2
Engineering diploma	4	0	0	4
Engineering/ technical graduation	13	9	13	35
Engineering/ technical post graduation	2	2	0	4
Pure science diploma	0	1	0	1
Pure science graduation	0	0	0	0
Pure science post graduation	1	1	11	13
Social science graduation	7	6	1	14
Social science post graduation	8	2	3	13
PhD	0	0	2	2
Total	35	23	32	90

After speaking to more than one hundred WWPs in the region and conducting several group discussions with a diverse set of people we feel that the study does point to two major constraints that determine women's low presence in the water sector as professionals:

i. Constraints that come from the type of work women do and are expected to do;
ii. The related but distinct category of content and structure of engineering science itself.

The two constraints are intertwined and cannot be separated from the other, but here we present some of the findings in two separate sections – one, which deals with socio-cultural issues that determine women's presence or absence in the bureaucratic organisations and the second, which speaks of their absence as a result of the nature of the sector itself.

While saying so we would like to make it clear that neither of these categories are distinctly separate from each other and that each of these categories also have the interplay of other layers of class, caste, religion, education, age and hierarchy of position etc. determining presence or absence.

Culture of the Water Sector

Culture of a sector can be defined in several ways that relate to the form the organisation takes, the content of work and priorities it lays, mode of governance, work relations and task allocations to name a few. In this section, we present findings that can be sifted out from the general organisational issues, although as we have discussed earlier the separation is fine.

Making educational/ career choices

Looking at both our secondary and primary data, we see that there are very few women in the sector and fewer still in the higher positions. One of the major reasons cited by women for the low numbers in the sector is that very few women opt for a career in civil or water engineering and secondly the water sector does not look beyond recruitment of engineers.

A deputy engineer puts this very succinctly *"teaching, health and education are considered as the most suitable options for women. Teaching because you are teaching values- children are moulded and that work is seen as women's work. There is no male interference there".*

Another woman who finally opted for an MSc in hydrology says *"I aspired to do Civil engineering, wanted to join but was told that Civil engineering is a course suitable for boys and would require site works which a girl can't do".*

An assistant engineer from BWDB Bangladesh says *"Nurse, teacher are respected as women's profession, but WATER is something traditionally different it is technocratic, and discourages women".*

Other views show a determination *"I opted for the job in Engineering because I felt proud that I was an Engineer"* Sectional Engineer, WRD, Maharashtra. *"I accepted Irrigation because it is a public sector and it creates national assets. I knew I was going to work in good department"*

Most of them said that they opted for civil engineering as a last choice. Most of them also considered settling down in either teaching jobs or some part time arrangements, which would not involve too much mobility.

Secondary data for Nepal as of December 8, 2003, shows that there are 4524 registered engineers in Nepal Engineering Council, out of which women engineers are 195 (4.56 percent).

Enrolment of female students in Civil engineering courses is very low in Nepal and there is no growth in their numbers. However, the trend suggests that female student enrolments in engineering colleges are increasing in the recent times. There is a strong preference to architecture as a course. Interviews with students indicate that among the engineering courses, architecture is considered the most feminine. It has more desk work than fieldwork which suits to women's biological responsibility to be mother and take care of children.

Chart 4 Students enrolment in BE Civil, Western Engineering College, Nepal

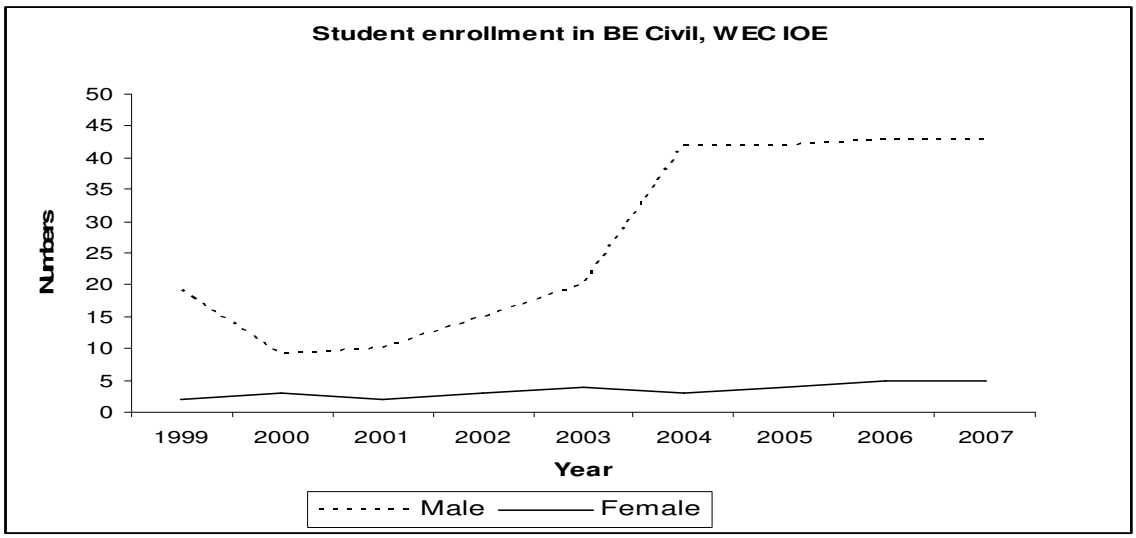


Table 9 Students enrolment into Bangladesh University of Engineering and Technology (BUET) from 1991 to 2001

Undergraduate			
Session	**Male**	**Female**	**Total**
1991-92	524	83	607
1992-93	528	77	605
1993-94	546	59	605
1994-95	559	60	619
1995-96	608	68	676
1996-97	610	121	731
1997-98	650	112	762
1998-99	637	111	748
1999-00	614	120	734
2000-01	637	168	805
2001-02	657	162	819
2002-03	678	136	814
Postgraduate			
Session	**Male**	**Female**	**Total**
1993-95	502	64	566
2001-02	593	54	647

Table 10 Admissions for engineering course by universities, Sri Lanka

	Peradeniya			Moratuwa			Ruhuna			Total		
	Total No	Female No.	Female %	Total No	Female No.	Female %	Total No	Female No.	Female %	Total No	Female No.	Female %
2001/ 2002	320	52	16.25	562	105	18.68	107	23	21.49	989	180	18.20
2002/ 2003	315	67	21.26	548	69	16.24	104	15	14.42	967	151	15.61
2002/ 2003A	329	59	17.93	535	102	18.37	116	23	19.82	1000	184	18.40
2003/ 2004	320	58	16.56	554	82	14.88	96	23	23.95	975	163	16.72
2004/ 2005	348	53	15.20	647	127	19.60	94	21	22.30	1089	201	18.45
2005/ 2006	364	71	19.50	801	177	22.10	205	32	15.60	1370	280	20.4

Source: Statistical Abstract 2006, Dept. of Census and Statistics

A similar pattern can be seen for both Sri Lanka and Bangladesh in the educational institutions. Bangladesh University of Engineering Technology shows only a marginal increase over the years in girl's enrolment for the undergraduate engineering courses. For the post graduate course it shows a downward trend.

In Sri Lanka too a similar picture is seen in all the prime universities.

Nature of Work Women Engage in

Of the hundred odd women interviewed across south Asia a majority of them, especially those from the engineering field are involved in deskwork of varying nature. They find this very unchallenging but agree that it is a choice that they have made for several reasons beyond their control.

Our data shows that most of the technical women are either working as sectional engineers or assistant engineers in different departments. Almost all of them felt that their skills were highly underutilized due to the unchallenging nature of their jobs. Most of them are stuck in administrative work and feel that their knowledge and understanding is not put to use here. The important question is why are women into these types of tasks?

Site work and financial transactions not your cup of tea?

In making choices of the kind/type of work they do once in the department women cited domestic responsibilities as the major reason for not opting for site work. But this was not always true and some women early in their careers were seeking site related experience, but were deliberately kept away from it. This convenient labeling of women never wanting site work was used to keep women away from a rich learning experience and also away from the corrupt politics of the organisation/sector. A Bangladeshi professional says *"mostly women are working in less important places, like drafting letter, and other communications, dealing with administrative problem etc. My case is different, as I have already proved my capability so no one bothers me now. I had to fight the culture of the organisation which only made women work at the office, but tell me what design work is complete without implementation at site?"*

One of the deputy engineers of MJP, Maharashtra says *"Women were shifted to a project office because there was little work there. I demanded a transfer to a sub-division office , as I was interested in doing some actual engineering work, but our boss was of the opinion that we should be transferred to less challenging project (tap drinking water*

supply) office as he would not be able to take the risks associated with sending women to the remote villages".

She regrets today that she did not fight her way through and today at the age of almost fifty she continues to be a Deputy Engineer, and works as Personal Assistant (PA) to an Executive Engineer.

Several of the young professionals spoke of their struggle to get jobs of their liking and shared how they were continuously under pressure to prove their mettle without falling prey to their various tactics. A Deputy Executive Engineer at CADA AP says *"There are more women who joined as Executive engineers but they don't have any work in the department right now. Therefore, they are assigned the tasks like drafting letters, correspondence that has no relation with their education so most of the new employees are very disappointed with the job".*

In Bangladesh, male bosses thought it to be a liability to recruit women for field work, but women have fought nonetheless. A gender specialist in BWDB challenged the decision of the senior to not send her to the field.

Apart from site work, which is said to require hard technical knowledge and competency and physical strength, women were also kept away from any financial dealings. Women narrated how different strategies were sought to keep away women from giving financial sanctions to projects. Men used their informal channels and collectives to decide on the share of the money.

Senior Administrator, Maharashtra WRD says *"It is difficult for a person who does not take bribe to survive in the system as he/she is continuously pressurised by others and as a result, work suffers. Women are recruited on Establishment department's desks because they are aware that they are usually not corrupt in nature. They look at this as one person less from the chain of corruption. Task allocations are thus based on these criteria, not on the work they do or are capable of doing. This work culture has to change".*

Renegotiating and Redefining work or fighting the system

Most of the professionals are caught in these situations and do not know if they should fight the system or come to terms through a redefinition of their work and find meaning in it. Like an MJP engineer says, *"Financial tasks are not given to women but neither are we interested in them"*. Or *"we are also happy with desk work" She continues "I have learned to find meaning in things beyond the water sector like teaching poor children which is more philanthropic than sitting at the desk"*

But there are others who fight it out, like for example a Bangladeshi professional *says "I do not want to bind myself in designing, rather I want to build my-self as an all-rounder. Who knows I may have to manage the entire organization in future?"* A similar feeling is voiced by many professionals in India as well. One of them presently working as an Executive Engineer is clear that in ten years time she will be heading the organisation.

It is indeed difficult to interpret which of the two options can be considered as women's agency?

Images, Symbols and Metaphors

Any description of a good water sector officer started with a "he". Most thought that technical competence was very important for success in the sector and the ability to think rationally and take instant decisions. Mostly men were seen to possess these qualities, although women too were confident of their own abilities in some instances.

One of the very capable senior officers in Maharashtra says *"Women face problem in this sector because we lack somewhere in knowledge and, daring compared to men. We should be tough to survive in this."* Another one added *"But women lack the capacity to take instant practical decisions on site. Because they have not received that kind of exposure they are always confined to the desk".*

A sectional engineer from irrigation department says *"an attendant in an adjacent office always thought I was a clerk in the Irrigation office. She was shocked when she got to know that I was an engineer"* a telling comment on how can women be engineers.

Many of the women described their relationships with their male seniors as fatherly, brotherly and one senior engineer says, *"My boss once introduced us in one public gathering as `these are my daughters'. This created a sense of attachment towards office, and it motivated me to do my best and live upto his expectations"*, which becomes a very patronising relationship. Another officer said that survival for women in this sector is tough because one has to *"possess the masculine and feminine qualities".*

In Pakistan, the scenario is different and all of the women described the water sector officer as male, engineer, corrupt, dominant, having support of influential/political people, field based professional.

However, recent changes in the sector undoubtedly have brought out other voices as well. They describe the ideal officer as not one with technical

competence alone but also one who has ability to communicate with people and establish a rapport with communities. These are voices largely of social scientists in the sector but also increasingly of sensitive women engineers.

Men's collectives and Women's collectives

Usually most crucial decisions are taken after office hours and this was voiced very strongly by the Assistant engineers in AP. They add saying that women find no time to be part of these informal collectives. They are too preoccupied on both the fronts and find it very uncomfortable to interact with men in these informal decision making spaces.

One of them says *"I think my work was not noticed because I am not able to be part of the informal meetings with the boss"*

Women too try to form their collectives, but these are more in the nature of sharing platform: sharing of injustice done to them in terms of promotion, appreciation of work etc. They also meet to discuss their personal lives and relieve themselves of the stress. In offices where women are in greater numbers these collectives get formed otherwise it is most often a solitary struggle.

In some places like in AP women said that there were efforts to register a formal organisation, but it never really took off. All of them felt that formal spaces would be more useful and that they should be initiated.

Difference in thinking and understanding of Water Issues

Understanding this was crucial from the point of view of getting insights into what are the belief systems of men and women and how they shape their understanding of issues and subsequent actions. We were not able to talk to men to assess the difference in thinking, so this set of data is largely based on women's self-perceptions about the differences.

Women work with a social understanding. They think about people and have a micro perspective which men are not conditioned to have. A sectional engineer in the Irrigation department in Maharashtra says *"Men think more about themselves. They give more importance to proving their capacities. But women think about others- At the household level women think about relatives, which men don't. At the office women think about other colleagues. Men don't think like that. If somebody comes late, woman thinks about why it would have happened. But a man says that don't give excuses. Superiority of men is also legitimized by the society. If a man is doing something wrong then nobody tells him so. But similarly if a woman does there are so*

many people who point it out. So women are always under pressure, if they do anything wrong".

A senior administrative officer in CADA AP says *"Yes, there is difference in the way men and women think. Women are more committed to their work, they are seen on their seats working right from morning to evening and deliver better outputs while men feel insecure when women outperform."*

In the Pakistan FGD women said *"There are differences in the way men and women think, because they experience different realities based on different types of attitudes they face in society. Women's interests are usually discounted in their absence in decision making. Apart from this women bring different set of values and perspectives to work".*

Understanding around water issues was largely dominated by the current departmental understanding. However, women are far more sensitive to micro planning and gender issues than what one would hear otherwise. In an FGD in the WRD head quarters in Maharashtra a group of women engineers had the following to say, *"Water scarcity is an important issue and we cannot think about this in fragments. All the concerned departments like watershed, irrigation etc should have a think tank at the 'mantralaya' (state) level"*

A Deputy Engineer at the same place says, *"I think government should initiate in building rapport with the people. I think the WUA would be instrumental in doing so. The benefits of WUA should reach people…"*

Addressing the concerns of women at the grassroots level was also articulated by the women professionals as an important but missed out area in the water sector.

Making a difference: Women as active agents in the organisation

In the changing face of the sector we do see some women taking very bold steps and making a difference to the sector and specifically to the cause of women. Women professionals said that some of their qualities have proved to be assets in the water sector as well as within the organisations. In a Nepal FGD women said that for conflict resolutions women were better, an example from a WUA was cited where a woman sociologist made a difference. Here her role as a social scientist and being a woman proved to be an attribute, which she used effectively.

Another insight from Nepal shows that gender mainstreaming becomes more feasible if a women engineer is involved in designing, it helps to change the discourse of women as uneducated and weak. It represents women as an expert,

and knowledgeable. Not only this, women colleagues can help the fellow male colleagues to internalise the gender issues better with her experiences

A sectional engineer from Maharashtra says *"In fact there are double advantages being a woman professional, because being a woman, villagers take extra care and they also respect out of admiration".*

In the Sri Lankan experience women engineers from the Irrigation Department who worked in the field stated that they had the ability to communicate better with both men and women farmers and they were accepted in the community and at field level. For example in walk-through surveys, women responded better to women engineers than to men as they could discuss their problems with them. In projects that demand women's participation in large numbers such as the community, water projects of the Water Supply and Drainage Board the community actually preferred to have women engineers and technical assistants deal with them.

Consultant with Irrigation and CAD, AP *"Being a woman, I can influence other women to come in the sector e.g. a women who was project staff cum teacher in the Musi Project, was the only village woman in the entire group, I used to take her in programmes like exposure visits or project committees. Since I am there, she feels comfortable to participate. A women officer's presence effects the participation of women in the field".*

Gender and Organisation Related Issues

In our study, we have specifically focused on the bureaucratic organisation, which emanates its own culture. In this section, we would look at a range of organizational issues from physical infrastructure and facilities to rules, hierarchy, work atmosphere and relations.

Gendered Spaces and Infrastructure

In all of the countries what comes out clearly is that basic facilities like clean separate toilets are missing. Most of these offices continue to be housed in old buildings, which were constructed at a time when it was not conceived that women could be employed in the water sector.

There are of course significant variations across countries and states in India. In some of the newly set up offices in the capital city of AP in India we see that these basic amenities are provided for and maintained as well. However, some older offices in AP too face similar problems and in the words of Deputy Director Hydrology department, *"There are toilets but the maintenance is too bad. There is no water. Most of such issues which are very basic necessities are not talked or raised because of shyness".*

In the Sindh region of Pakistan at the SIDA office women said that there are no separate toilets for women and mostly they use common toilets which are very unclean and unhygienic. Interestingly the location of the toilets in the office is also a hindrance to use them.

In Maharashtra, India, of the thirty five women interviewed, only four of them mentioned a separate toilet facility in their own office. Many others had to work out some arrangements with other offices or with staff who lived in the staff quarters in the campus.

The other major lack of facilities came in the form of transport and accommodation during fieldwork. In Pakistan, all of the women employees mentioned a significant lack of facilities for fieldwork for women like transportation, lodging and boarding facilities. Evidence shows that women themselves have to pay for fuel and transportation. Although this is reimbursed later, it is not a part of ToR and therefore involves a struggle each time women are out on fieldwork. In India and Bangladesh too the overall availability of transport is not conducive for women's travel. This is strongly stated by an Assistant Executive Engineers in Irrigation and CAD, AP where she says at her

level too vehicle facility is not provided and then it becomes tiring and this is one of the reasons that women avoid field visits.

Another striking problem that most women face in the field is the lack of security and this was voiced by women from all the countries in SA, but more so in Pakistan and Bangladesh.

Evidences from all these countries bring about how space and infrastructure facilities too have a gender to it and how raising a demand for these facilities too is seen as a 'non issue'.

Maternity leave and other benefits

Women are often seen as a liability and more so women who become pregnant. In different countries, the experience of rules for maternity and childcare varied. None of the contractual employees had the facilities of maternity benefits, which are due to other permanent government employees. In most of the countries, the maternity leave is not more than three months and women are demanding for at least six months of leave. In India the central government rule does grant a six month paid leave, but neither of the two states studied have accepted that rule.

In the SIDA office in Pakistan, women are not entitled for maternity leave with pay and it is a Herculean task to get approval for leave. In this office women are not considered professional if they ask leave for maternity / reproductive health problems or deny for late hours working

In Nepal, the leave granted is only fourty five days and women think it is very difficult to get back to work so soon. As per the government rule here, women staff can have leave for fourty five days on paid basis for two pregnancies. In addition women can have unpaid leave for an extended period. Interestingly women feel so pressurized to use this extended unpaid leave and women in Nepal say that they prefer not to go for extended period of unpaid leave when they are located in better place for the job such as ministry and department in Katmandu, the capital. An agriculture officer, who looks after small irrigation projects of the government, said, *"I was scared to take extended leave, because many officers would have liked to be based in my position which became vacant when I went on leave. If I rejoin later than forty five days then I would have been posted in some remote districts"* So she resumed work after forty five days of her leave, leaving her child at home and tried for alternate feeding besides regular breast-feeding.

Most offices do not have a childcare facility. There is no facility for bringing infants or breast-feed them in the office premises. Such a condition not only

affects the mother's health but also has adverse effect for the child. In Bangladesh of the thirty two women interviewed only seven said that their office has a day care. In Irrigation and CAD, AP, India, almost all women talked about the need for childcare facility in the office. Not only this, some of the women came forward and filed a requisition to ENC (Engineer in Chief) Administration, for providing a space in the office premises for childcare facility. The request was ignored by saying that there is no vacant room for childcare.

Maternity is not just the act of delivering a baby but involves much more than that. Women would need support in every way during that period.

An irrigation engineer in Maharashtra located at the State office says *"pregnant women are often seen as problems- but the nine months given by the women should be seen as an investment for the future"*.

Rules and policies within an organisation clearly reflect the gender dichotomies, which separate the productive sphere from the reproductive one. Organisations are seen as gender neutral and hence problems of pregnancy and child care should be handled at the domestic level and not brought out into the organisational or public domain.

Sexual harassment at work place and related supports

Most of the women were not too forthcoming about discussing sexual harassment at work place. In Pakistan of course women were extremely articulate and narrated their experiences regarding men's behaviour towards them. Majority of women here reported cases of harassments, and some of them left their jobs due to the same reasons. *"Yes we are asked by male bosses to dress in a particular way. In fact many appointments too are done looking at women's faces rather than their work expertise"…. "Often men ask us to come to their cabins when some of their male friends come to visit them". "We are also asked to perform their personal tasks not related to office jobs. For example writing/preparing assignments of their children or writing personal papers/articles/book chapters for them"*

In Maharashtra a woman employee says *"During the Gadgebaba Swatchata Abhiyan (Total Sanitation Programme) one woman sanitation expert had made a complaint to us about the Chief Executive officer (CEO) of a district who would often call her to his cabin after the office hours. She was on a contractual employment so was scared to give a written complaint….We sympathized with her, and suggested that she should take a drop until this CEO is in charge, and when he is transferred we will recruit you back. But then she got same work in different district"*.

A community development expert in Maharashtra says *"a lot of harassment is done in subtle ways- like transferring a woman to a difficult field area, allocating her tedious tasks not related to her brief.."*

In HMWSSB, Andhra Pradesh, a retired officer shared a case of sexual harassment in the office premises targeting a woman Attendant. Women's Welfare Association protested and took this issue to the Managing Director. The accused was threatened with a punishment of suspension from his job. This case was discussed with other employees informally and secretly to spread the message that stern action will be taken if such act is repeated again. Interestingly very few women shared their personal experience and said that they had heard that there are problems with other women, but they themselves have never actually faced this. A woman from Bangladesh says, *"This has never happened to me. I think it all depends on a woman and how she portrays (behave) herself".* All of them agree that it is best not to cross their limits either in dressing, having social relations at work or anything not acceptable to the society. If they want to dress the way they want, they fear that men would pass comments on them.

Many of the offices in India do have a grievance redressal cell or an anti-sexual harassment cell, but none of them said that it was active. In fact, no cases get reported there so there is no activity. None of the other countries reported that such a cell is mandatory.

Normative Woman

Most women, whether engineers or otherwise, enter the so called gender neutral organisations with the normative expected of them. In Pakistan women said that they couldn't shout or laugh loudly in offices, they should be good looking, smart and well dressed and, caring as well. Politeness is valued. *"I was shocked when during the interview one of the members of interview committee asked me not to apply makeup or dress up the way he thinks women should wear clothes".*

In Irrigation and CAD, and GWD, AP too most of the WWP accepted that women should wear decent and appropriate clothes; *Salwar kurta or saree* with half or full sleeves as wearing sleeveless might warrant unnecessary attention and gossip.

If a woman is dynamic she is seen as very egoistic and stretching herself a bit too far An Assistant Engineer from BWDB, Bangladesh is rightfully agitated about this and says *"Always women are thought typical. This is not the fact!! This is time to re-think..."*

Women as preferred subordinates

In most of our FGDs and individual interviews across the region women spoke of themselves and other women as being very sincere and hard working. They also reiterated that they were non-corrupt and did not indulge themselves in power politics within the organisations.

In Nepal, men said that women brought decency to the office space and in other words legitimacy to the otherwise corrupt place.

Many of the male bosses and colleagues we spoke to also reiterate this point of sincerity and hard work. Women do not leave their desks until office hours are over, as against men who continuously need to move around, go for a cup of tea or a smoke.

Male bosses in fact were very proud of their female subordinates and seemed to see them as an asset. DFT team leader, Maharashtra *" women do their tasks with dedication, we specially like to give them tasks that have to be completed in a particular time and need rigorous follow up"* As a woman from Pakistan rightly commented, *"Women's issues are not their priority; they want to see women as subordinates to men"*

Most women recognise these qualities in themselves and also the fact that they get to do the most tedious of the tasks while the men fritter away their time.

Women said they hardly have the time to engage in the organizational politics and neither the initiative or the values system to involve in corruption. So more than lauding these as inherent feminine qualities one must see them in the context of women's over burdened life which does not permit them to engage in these activities and the societal expectations of them. But nonetheless these are qualities that need to be nurtured as part of a progressive value system.

Women as Leaders

Most men find it difficult to accept women in leadership roles. They are always more comfortable in brotherly, fatherly roles to women (of course they do not miss any opportunity to make passes at them as well in these roles too!)

Deputy Engineer, Maharashtra MJP *"Men are not ready to accept women as their boss. Age is another constraint. A junior who was senior as a worker found it difficult to accept me as a boss. Then it becomes difficult to take decision."*

Often men oppose women's seniority as that curtails their chances of sharing in the corruption that takes place.

Women had a mixed response to women bosses. Some were sensitive to women's timings and allowed for more flexibility in work hours, but some were very rigid and refused to budge on the rules. In fact, women said that sometimes male bosses were more considerate in this regard.

Gender neutrality with seniority

A typical finding across the countries was how seniority and moving up in the hierarchy affects women professionals. Many of these engineers have struggled their way to reach the posts they have but when we spoke to them, they have this to say Senior Executive Engineer CADA, AP -*"I have a good relation both with my boss and my juniors. One should focus on work and the outputs but not the gender. I do discriminate based on gender. There should be positive relations between each one of us to deliver good outputs."* A similar experience can be shared from Maharashtra as well where a woman who started out as an assistant engineer is now a deputy engineer, but feels that gender should not come into organisations.

A different example was seen of an Executive Engineer leading an entire division in Maharashtra of how an individual actor can change the culture of the organization/sector. With her innovative ideas of disciplining, she has made a difference to work culture and has made many of the women feel secure. Examples are cited by some of the other women members who worked under her which talk of her sensitivity to women and their roles and responsibilities. Most men who were not too happy to see a young woman boss were seen to give her the most respect and support in her work. Usually women in power tend to become gender neutral and start advising women to become tough, leave their private spheres at home etc, but she seems to be different and it is this difference that is important. There is no struggle for being equal to men or being like men, but being a woman and yet succeeding by your own definitions.

Changing Gender Relations at Work and Home

As a working woman and as water professional women have had to undergo several changes in their lifestyles. Many of them are overstressed because of several responsibilities on different fronts and lose out on any meaningful relations with both their families and work colleagues.

One of them says *"After doing all the housework I am not given due status in the house. I am always taken for granted and decisions are always taken excluding me. My role is that of executing the decisions"*

"Women cannot fully dedicate to their work also because of the patriarchal system. Home becomes their first priority. They look at the work as an employment and not as a social concern".

"As a woman I had to struggle to prove my mettle. Whereas my male colleagues were encouraged to take new responsibilities, they got more exposure, and so they matured faster. They easily get sites, but for me I got it late. There is a protective attitude towards women which is not always positive. At office level, I continuously have had to prove myself. The seniors always seek opportunities to find faults. A smallest of the mistake is not spared".

"Woman engineers are expected to be perfect but the same is not expected of male Engineers, they are allowed to make mistakes".

At work women are often ridiculed for getting all the privileges in terms of leave, desk work etc, but women think differently and say that builds tremendous pressures ion them. They need to prove their mettle and therefore demand exposure to a wide range of activities, but never have that opportunity. So both at home and at work, women are seen to escape work.

Caste and other forms of social discrimination

Patriarchy does not go without the other forms of social discrimination. In the Indian context the interplay between caste, class and patriarchy needs to be examined far more carefully than it is done here. One senior administrator says, *"I am not dominant kind of a senior, may be because of my caste (SC) I have always taken a submissive role. So even as senior I am not bossy".*

A young civil engineer in the head office Mantralaya belonging to the scheduled caste says, *"I never faced caste related discrimination. May be people feel or express their jealousy but it is among themselves, I do not know any. Never experienced it on face, because people are aware, that that it could be termed as harassment.*

Way Forward and recommendations for Government Policies

Before we begin on this section, we need to reflect on our findings, which show that two sets of issues determine women's presence in the sector. The first relates to the educational choices women make and the second relates to the major constraints that women face after entering the sector where the struggle between the public and the private sphere becomes significant. Challenging the notion that hard sciences are for men and soft disciplines for women therefore becomes an important ideological struggle. At another level, a change in understanding of women's work too becomes important in changing our existing belief systems that determine women's absence in this sector. Reconceptualising science, here the water sector and women's work would definitely go a long way in making it more conducive to gender equity. Moving with this understanding, the study then proposes the following recommendations

Need for a Gender Policy in the Water Sector

Almost all the women we interviewed said that there is no specific gender policy for the organisation and it would be important to have one. This should outline specific rules regarding organisational facilities, allocation of tasks etc.

More numbers can make a difference

Changing composition may have greater impact as women's interests are discounted in the absence of women at all levels, mostly at policy and decision making level. Women will also bring in a different set of perspectives than men on many issues.

It therefore becomes important to bring in a policy of reservation in government recruitment. Maharashtra has introduced such a policy of 30% reservation on all new recruitments and this will change the composition of the sector in the coming years.

A view from Sri Lanka stressed the need for including non engineering experts in the water sector. The integration of sociologist, social worker, graduate in environment science and professional from other disciplines is very important to bring in a socio-technical perspective. The graduates of master in environmental science (with 'water resources' as an elective paper) complained that they did not find a job in water sector. They complained that their credibility to work in water sector is considered less as compared to engineers.

Basic amenities and benefits

All the countries almost universally asked for improvement in sanitation facilities in the work place. Apart from this, increasing the duration of maternity leave upto six months and introducing a childcare centre at the work place. Women engineers in AP narrated an experience of following up on this demand and yet not succeeding.

Women also spoke of some flexibility in work hours especially those with younger children as that becomes a major constraining factor for women to continue performing effectively. Women who have to take a break after marriage and children need some incentives in terms of fellowships to get back into their careers. Some of these benefits have been introduced by some state governments like Maharashtra for example in India

Training and Capacity Building

The Sri Lankan study prominently highlights the need for bringing in multi disciplinarity in the water profession. Trainings on bringing in a socio-technical perspective of water management is thus seen important. Apart from that several women said that they need regular refresher courses on engineering subjects. A lot of their knowledge does not get utilised and hence they feel stagnated. Many of them said that there were no trainings done with them after the induction trainings and exposure. A few of them who had attended trainings on communication skills, building rapport with communities etc found it very useful and were keen that more of these trainings take place. Women in Pakistan underscored the need for gender sensitivity trainings for the male staff and said that no change would be possible without that. In Bangladesh all the WWPs emphatically stated the need for capacity building as a major requirement, bit for themselves as well as to sensitise the men in the office.

Networks and regular meetings of these networks

In most countries women felt the need for regular meetings through networks that can liaison with other women's groups as well. The interviews clearly showed that women are looking for an articulation of their concerns and want visibility to their concerns.

In conclusion, we see that the challenge is formidable but requiring attention. The challenge for us then is the creation of new forms of organisation, education and practice through which scientific knowledge and technique will become more representative and inclusive.

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