

Gendered Participation in Water Management in Nepal

Discourses, Policies and Practices
in the Irrigation and Drinking Water Sectors

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Pranita Bhushan Udas

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Glossary

<i>Adhiya</i>	<i>Share cropping with half of the produce shared with the landowner</i>
<i>Ama</i>	<i>Mother in the Nepali language</i>
<i>Bahini</i>	<i>Younger sister in the Nepali language</i>
<i>Bandhas</i>	<i>Strike that prohibits the running of vehicles and educational institutions</i>
<i>Beruju</i>	<i>Uncleared account of the government in the Nepali language</i>
<i>Bhauju</i>	<i>Brother's wife, sister-in-law in the Nepali language</i>
<i>Daju</i>	<i>Brother in the Nepali language</i>
<i>Dalit</i>	<i>Population considered as untouchables in the Hindu caste system</i>
<i>Fajil</i>	<i>A paid position in the Nepal Civil Service without a job description, considered as a position for future program needs.</i>
<i>Gagri</i>	<i>A traditional Nepali water pot with a thin neck, carried by women on their hips with support of their waist.</i>
<i>Ganga</i>	<i>Goddess of water as per Hindu mythology</i>
<i>Gorayat</i>	<i>A messenger in a Chaudhari Tharu community in Udayapur district</i>
<i>Hali</i>	<i>Paid labour in the farming system in Nepal</i>
<i>Hansari</i>	<i>A collective activity of all users of an irrigation system to contribute labour to clean the canal</i>
<i>Hardware</i>	<i>Construction activities of an infrastructure development program</i>
<i>Indo-Aryan</i>	<i>A migrant community of Indo-Iranian origin, mostly following Hindu religious practices in Nepal</i>
<i>Jewar</i>	<i>Head of a Samaj, the traditional institution to regulate village issues among the Chaudhari Tharu in Udayapur</i>
<i>Khadel</i>	<i>People skilled in breaking large rocks, using warm horsegram</i>
<i>Kirat</i>	<i>An ethnic indigenous group of the Himalayas</i>
<i>Lalpurja</i>	<i>An ownership document of a drinking water supply system in the form of a card</i>
<i>Lord Shiva</i>	<i>A Hindu God, symbolising creation, transformation and destruction</i>
<i>Malik</i>	<i>A person who is a landlord in the feudal system</i>
<i>Matwali</i>	<i>A community belonging to the Kirat tribe among which consumption of alcohol symbolises purity</i>
<i>Nokar</i>	<i>Servant, labourer, in the feudal system of land management</i>
<i>Pati</i>	<i>A hamlet of 5 to 20 households of Chaudhari Tharu families organised in a circle</i>
<i>Samaj</i>	<i>A traditional institution of the Chaudhari Tharu</i>
<i>Sarbahara</i>	<i>Aristocrats and nobles</i>
<i>Sari</i>	<i>A traditional Nepali dress, with a long piece of cloth wrapped</i>

	<i>around a woman's waist covering her legs</i>
<i>Sarkar</i>	<i>The government</i>
<i>Siwalik</i>	<i>A mountain range of the outer Himalayas with an elevation between 700 to 1500m above mean sea level lying between the Terai and the Mahabharat range</i>
<i>Sudra</i>	<i>Lowest caste group in the Hindu caste system</i>
<i>Thar Ghar</i>	<i>A system practiced in Nepal before the 1950s in which people from six families were given the posts of nobility</i>
<i>Tharu</i>	<i>An ethnic community of Southern Nepal</i>
<i>Utaulo Chhada</i>	<i>Vulgarity in the Nepali language</i>
<i>Vaisya</i>	<i>Third class category within the Hindu caste system</i>
<i>Vernas</i>	<i>Class as per the Hindu caste system</i>
<i>Vikas</i>	<i>Development in the Nepali language</i>

Acronyms

ADB	Asian Development Bank
ADB N	Agriculture Development Bank Nepal
ADWS	Asari Drinking Water System
AIS	Asari Irrigation System
AMIS	Agency Managed Irrigation Systems
AMSL	Above mean sea level
AO	Association Organiser
APP	Agriculture Perspective Plan
BAIS	Bhusune-Asari Irrigation System
BIS	Baruwa Irrigation System
BNP	Basic Needs Program
CBO	Community Based Organisers
CMIASP	Community Managed Irrigated Agriculture Sector Project
D/SDWSSO	Division and subdivision Water Supply and Sewerage Office,
DDC	District Development Committee
DDG	Deputy Director General
DFID	Department of International Development
DG	Deputy General
DIDU	District Infrastructure Development Unit
DOI	Department of Irrigation
DOLIDAR	Department of Local Infrastructure Development and Agricultural Roads
DWSS	Department of Water Supply and Sewerage
EDR	Eastern Development Region
FGD	Focus group discussion
FINNIDA	Finnish Aid
FIWUD	Farm and Irrigation Water Utilisation Division
FMIS	Farmer Managed Irrigation System
FRWSSSP	Fourth Rural Water Supply and Sanitation Sector Project
GAD	Gender and Development
GDWS	Gaighat Drinking Water System
HDR	Human Development Report
IDT	Institutional Development Team
IIMI	International Irrigation Management Institute
IMC	Irrigation Management Centre
IMP	Irrigation Management Project
IMTP	Irrigation Management Transfer Project
ISP	Irrigation Sector Project

ISSP	Irrigation Sector Support Project
JAKPS	<i>Janata ko khanepai ra Sarsafai Karyakram</i> (People's water supply and sanitation programme)
MGD	Millennium Development Goals
MOI	Ministry of Irrigation
MOLDP	The Ministry of Local Development and Panchayat
MPPW	Ministry of Physical Planning and Works
MUD	Ministry of Urban Development
NEWAH.	Nepal Water for Health
NFIWUAN	National Federation of Irrigation Water Users' Association Nepal
NGO	Non-government organisation
NISP	Nepal Irrigation Sector Project
NPC	National Planning Commission
NWP	National Water Plan
NWRS	National Water Resource Strategy
PIM	Participatory Irrigation Management
RWSSFB	Rural Water Supply and Sanitation Fund Board
RWSSSP	Rural Water Supply Sanitation Sector Project
SISP	Second Irrigation Sector Project
SOPHEN	Society of Public Health Engineers
TB	Tibeto-Burman
TDF	Town Development Fund
UBIS	Upper Baruwa Irrigation System
UNDP	United Nation Development Program
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USD	United States dollar
VDC	Village Development Committee
WAD	Women and Development
WB	World Bank
WDO	Women Development Office (district office of the Department of Women and Children, under the Ministry of Women, Children and Social Welfare)
WECS	Water and Energy Commission Secretariat
WHO	The World Health Organisation
WID	Women in Development
WUA	Water Users' Association

Preface

This thesis has been inspired by several encounters that shaped my interest on equity and justice in water management. The places of these encounters and real life experiences have ranged from the high mountains of Nepal to the National Federation of Water Users' Association in the capital, and raised new understanding and concerns. These multiple experiences in and around water access and control have raised questions on 'who pays, who works', 'whose decisions, who is affected', 'whose resources, who enjoys', and 'why is someone much more water secure than others?' I realised that understanding issues around equity and justice could be personal as well as political. I could only conduct and conclude this study with the support, encouragement and patience of several people involved in this process of research.

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Mr. Rajan Burlakoti assisted with my transfer of field data into maps and digital media presented in Chapter 6. Dr Suman Gautam helped in sharpening my arguments. Dr Bishnu Pathak helped to verify conflict related data. Thanks to Doris for skilfully putting my arguments into a more readable form.

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Chapter 1: Introduction

“... A village woman visited an irrigation official. She knew what writing looked like, but could not read and write. She walked for four hours to the nearest road-head and travelled an additional two hours by bus to reach the office. On arrival, she explained her fears about the possible consequences of rains in her village: river floods threatened to wash away their fertile lands, and cause significant damage to the area. She came to the office to request for iron mesh for gabion structures to strengthen the river banks, to prevent these problems. The official, a male engineer, to whom she addressed her request, was also the person assigned by the government to implement the policy goal to increase women’s participation in water programmes. He was sympathetic and displayed concern for her problem. In a kind and polite way, he asked:

‘Kina dukha garnu bhayo? Ke logne manche thiyenan? (Why did you go through all this trouble? Were there no men around?).’

-Field observation, District Irrigation Office, Kavre District, 2001

This communication between an official, who was a service provider, and a village woman, who was supposed to receive the service, prompted a number of questions:

Did the engineer’s remark and attitude encourage or discourage the woman while visiting the District Irrigation Office? Would his question encourage her to visit the irrigation office again, or would she look for a man then, either to accompany her or to visit the office in her stead? What did the engineer mean by saying ‘were there no men...’? Did he imply that only men were the ones to visit offices? Or was he just trying to be polite to the woman, expressing concern about the trouble she had taken to visit his office? Or did the engineer feel ill at ease to deal with a woman from a village? And what did all this mean with respect to his capacity to implement policy goals for more women’s participation in water management? These questions are not specific to this example, but arise with any planned effort to improve women’s participation in water management.

At a personal level, throughout my years of work and research, I have interacted with numerous water professionals. They ranged from persons implementing projects in the water sector to water scholars. Each interaction provided a varied set of experiences, prompting numerous questions regarding (planned efforts to improve) the effective participation of women in water management. I received warm and rather positive responses and co-operation from the staff of the Department of Irrigation (DOI), while working with a non-governmental

organization involved in facilitating the formation of the National Federation of Irrigation Water Users' Associations Nepal (NFIWUAN) in 1998-1999.

This co-operation was maintained even later, when I worked as a researcher on gender and irrigation issues in 2000-2002.

In sharp contrast to the responses from the DOI staff were some reactions I received from scholars. I remember an instance (in 2004) where one of them, referring to the topic of my research, remarked: 'Oh, so you also ended up with *gender*!' Following a consultation meeting on 'Reflection on the implementation of the gender component of water policy in Nepal' in 2007, I received a similar reaction from one of the engineers participating in the event. Knowing my educational background (Bachelor in Agriculture Science, with a specialization in Agro-economics), he expressed surprise with my research topic, which to him did not 'fit in' with my undergraduate degree. To him, gender was a totally different field of study.

These interactions made me wonder how different water professionals perceive '*gender*' as a topic. And how, in turn, would these perceptions influence their professional attitudes and practices? Would an official's personal conviction on 'gender' influence his actions? Would it influence the way he took up or worked on themes related to gender? Also, when even water scholars regarded 'gender issues' as something separated and far removed from other critical water issues, what would it mean for the (potential) effectiveness of policies that envisage bridging gender gaps and achieving more equity and equality in water?

These were the questions that formed the inspiration and stimulus for my research, which critically looked at policy attempts to improve gender equity in the water sector in Nepal.

Objectives

The main objective of the study was to understand the complexities of achieving *gender equity* in the water sector through *policy* measures aimed at increasing the *participation* of women in decision-making bodies.

At theoretical level, it aimed at contributing to theories about planned social change and gender equity - focusing on the water sector - on the one hand, and theories about water management on the other. More specifically, it set out to unravel how policy measures to improve the gender balance of users' participation in water management were translated into operational measures (by implementers at different levels), linking the latter to two sets of outcomes: actual levels of participation and access to water.

So I investigated how and to what extent policy measures improved participation as well as whether participation in water users' organizations improved access to water.

Fieldwork for the study was undertaken in 2004-2006 in Nepal particularly in irrigation and drinking water systems and government offices in Udayapur district as also in regional and central government offices of ministries involved with irrigation, drinking water supply, and

development planning. Some of the numeric data on facts about the departments was updated in subsequent years.

In this chapter, section 1.1 discusses the research background, rationale, and research questions, while section 1.2 goes into the research concepts. Section 1.3 describes the research methodology, and section 1.4 presents an outline of the main body of the thesis.

1.1 Background, rationale, and research questions

1.1.1 Background: Water and gender in Nepal

Nepal is a landlocked country of 140,800 square kilometres, situated between China and India. The country has experienced immense socio-political changes in the recent past, most notably the Maoist-based 'people's movement', which was active between 1996 and 2006. Moreover, 2008 saw the end of 240 years of monarchy, establishing a young republic in the country. To the world, Nepal is known as an aid-dependent low-income country, with high levels of poverty and inequality (Sharma 2000; Blaikie et al. 2001). Many studies point at intersecting socio-cultural hierarchies based on gender, caste, and class as causes of such levels of poverty (APROSC 2003; Bennett et al. 2008; UNDP 2009).

Yet, Nepal is also a country rich in natural endowments, with abundant water sources, biodiversity, and aesthetic values (Bhatt et al. 1981; Bhujju et al. 2007). There are about 6000 rivers in Nepal with a potential to generate 83,000 MW of electricity (WECS 2011). The focus of water sector development has changed over time. Since the 1970s, the state has profiled water as 'blue gold' to produce hydropower and to encourage foreign investment in the country (Pradhan 2000; Gyawali 2001). There have been counter-discourses and opponents who argued for the need to prioritize the use of water to meet the livelihood concerns of the local population over the production of electricity export to neighbouring countries, especially to India (Dixit & Basnet 2005; Gyawali & Dixit 2010).

Historically, the Ministry of Water Resources (MOWR) has been the umbrella organization looking after the overall water sector development in the country. It was in charge of water for agriculture as well as involved in hydropower generation. In 2009, the ministry was reorganized into two different ministries, the Ministry of Energy and the Ministry of Irrigation, with a view to promote both water sectors more systematically for the economy. The Department of Irrigation (DOI), formally within the Ministry of Water Resources and currently within the Ministry of Irrigation, is the primary executing agency in charge of expanding irrigated agriculture in the country. Drinking water supply has been looked after by the Ministry of Physical Planning and Works since 1972. The Department of Water Supply and Sewerage (DWSS) under this ministry until 2012, and then after under Ministry of Urban Development is the main executing agency to implement water supply programmes.

This thesis focuses on the policy process of these two key agencies: the Department of Irrigation (DOI) and the Department of Water Supply and Sewerage (DWSS).

Nepal presents a very diverse and complex socio-cultural context in terms of demographic composition, with multi-ethnic and multi-lingual social groups residing at different altitudes (See further Chapter 2). Gender norms and values of the Nepalese population residing in different locations also vary. For example, there is relatively less gender segregation among the hill inhabitants of northern Nepal compared to the communities living in the southern region of the Terai¹.

Caste matters in important social parameter for day to day interaction among Nepalese. A group referred to as *Matwali* ('liquor-drinking people') comprising mostly *Kirat* families, gives equal importance to sons and daughters in family rituals and has relatively egalitarian gender relations.

In contrast, the *Aryan Brahmin/Chhetris* caste groups have rather strongly marked gender differences and hierarchies, notably anchored in rituals related to birth, marriage, and death (Bista 1991; Bennett 2002).

The national policy is patriarchal in that it favours men in the inheritance of family property and citizenship.

Such broader cultural and social gender differences co-shape gender relations and gender-based interactions in water management. They also determine where water activities take place, and by whom and how activities are done.

1.1.2 Rationale: Policy efforts to address gender inequities in water

Similar to other South-Asian countries and elsewhere in the world, the visibility of women in public decision-making forums is virtually non-existent in Nepal. This is true in almost all sectors but particularly so in the water sector. So it was logical that increasing women's participation in decision-making bodies - such as irrigation and drinking water users' associations (WUAs) - became one of the often advocated policy measures to reduce gender inequities in water management.

Advocates and scholars arguing for the need to increase women's membership and participation in decision-making bodies do so not only to give women a voice there and reduce gender inequities, but also to improve the efficiency and sustainability of water management organizations (Moser 1989; van Koppen 1998; Meinzen-dick & Zwarteveen 1998; van Wijk-Sijbesma 1998; Agarwal 2001; Schreiner 2001). They argue that improving the participation of women in public forums is a strategy to overcome gender subordination, promote women's empowerment, and ensure effective delivery of water (ADB 2003). In other words, they suggest that water projects fail partly because of the non-involvement of women beneficiaries, and that gender-insensitive water projects further marginalize women.

¹ Nepal is geographically divided into three main regions from the north to the south, based on altitude: the high northern region is referred to as the mountains, followed by the hills in the middle, and the plains called Terai in the south.

Studies documenting water needs and responsibilities of women highlight such arguments (for instance, van Wijk-Sijbesma 1987; Bhadra 1992; Bruins & Heijmans 1993; Zwarteveen 1994, 1995; Francis et al. 2000; Bhadra & Karky 2003).

At international level, many policy statements explicitly articulate the importance of enhancing women's leadership and participation in water management. These include the United Nation Decade for Water and Sanitation (1975-85), the Agenda 21 of the Earth Summit in Rio (1992), the Dublin Principles of 1992, and the establishment of the UN organization for women more recently (2010), among others. The UN Water for Life Decade 2005-2015 likewise emphasized the involvement and participation of women, in their promotional efforts to fulfil international commitments on water and water-related issues (WWAP 2009:304).

At national levels, many countries, including Nepal, have adopted policy provisions and quotas for women to improve their participation in (water) decision-making bodies. Since the 1990s, the Nepal government has aimed to achieve a minimum of 20% women's participation in almost all development sectors (such as education, forestry, and health) including irrigation and drinking water.

In 2003, the irrigation policy of 1992 - prescribing that a WUA committee be constituted with a minimum of 20% female users - was even amended by stipulating that WUA committees should have a minimum of 33% female members.

But after more than two decades of such policies having been in place, the outcomes seem disappointing, in two ways. First of all, the policy goal to achieve a minimum of 20% (now 33%) of women's participation in users' committees has not been achieved.

In 2006, I conducted an analysis of the composition of committees of the 588 irrigation WUAs registered with NFIWUAN from thirty one districts. I found that out of thirty-one districts, only four districts had a district average higher than 20% women members' representation in the committees. In five districts, WUAs had only one woman member. The total number of women in the committee was one-seventh of the total number of men committee members. Among the women who were committee members, very few functioned as office bearers (president or vice president, treasurer, secretary). Of 673 women committee members, only 58 women held such positions.

This situation had not changed in 2010. Of the forty district users' committees registered with NFIWUAN at that time, only 25% had women members, of which only 7.5% were chairpersons.

So, although these numbers showed some improvement compared to the past when users' committees consisted of men only, results remained disappointing. This raised questions about the suitability of the policy clause as well as about the effectiveness with which it was being implemented.

Secondly, questions could also be raised whether and how increasing the numbers of women

in WUA committees links to the achievement of broader equity or empowerment goals. On the one hand, the mere existence of the policy seemed to have contributed to (or perhaps been part of) a change in the dominant discourse, gradually changing the idea that ‘public decision-making is a men-only affair’, making it less normal and accepted (Udas 2006). There are also documented instances where women had made use of the quota system and their participation to voice their water concerns (van Koppen et al. 2001; Udas & Zwartveen 2005). However, in many cases, women members of WUAs seemed to be members on paper only, with meeting the quota being the sole aim of their attendance (Chhetri 1999).

There were also other problems. Membership, for instance, was often concentrated in women belonging to elite households or to wives of local leaders (von Benda-Beckmann et al. 2000; Sodemba 2002). In some cases, female members were only passive listeners (Meinzen-Dick & Zwartveen 1998), or they arranged to be replaced later by a man (Udas 2002). For such reasons, studies suggest that results of the quota policy were mixed at best (von Beckmann et al. 2000; van Koppen et al. 2001; Kanji 2003).

More in general, after twenty years of policy efforts to reduce the gender gap in almost all sectors, the overall gender inequality index of Nepal remains 0.48, ranking it 102 out of 186 countries (UNDP 2013). This raises serious and troubling questions about the effectiveness of planned efforts to reduce gender inequities and injustices by increasing women’s participation in local decision-making bodies.

1.1.3 Research questions and hypotheses

This thesis sets out to deal with these questions. It is based on a study of policy processes in water management (irrigation and drinking water), focusing specifically on measures to improve the participation of women in WUAs.

The study, firstly, explored how different water policies discursively constructed the links between gender and water. Secondly, it examined how implementers at different levels dealt with the task to address gender questions in their work. Finally, it investigated how policy measures shaped or transformed gender differences in water management in terms of roles, rights, and responsibilities.

This categorization in three stems from a conceptualization of policy processes as consisting of negotiations and transformations in three domains:

- (1) policy formulation, in which donor representatives negotiate with Nepalese policy makers to formulate water policy measures and the government formulates policies, among others to meet global commitments
- (2) implementation, in which implementers at different levels negotiate with other actors to operationalize the policy objectives
- (3) 'outcomes', in which (some) users negotiate with implementers and others to transform and construct water systems that suit their interests and needs.

This distinction in three domains is a pragmatic one, as in practice they are not neatly bounded but overlap.

For the first domain, it is important to realize that investments in water sector development in Nepal are largely drawn from public sector funds. Loans from multilateral development banks like the World Bank (WB) and the Asian Development Bank (ADB) constitute the largest share of these investments. An analysis of five years (2003-2008) of national budget allocations for the irrigation and drinking water sectors indicates that 48% of the allocated funds come from loans, whereas 13% come from grants (Red Book of the Government of Nepal of respective years).

This also means that development banks and donors have a large influence in determining how money is spent in these sectors and on water development in general. Donor agencies and development banks often also have their own gender mandates and goals. It can even be argued that gender concerns appeared in Nepalese water policies largely because of donor conditionalities and pressures (cf. Sharma 2000:129), sometimes as part of or prompted by international treaties. For instance, a 'Women and Development' unit was established at the Water and Energy Commission Secretariat of the Ministry of Water Resources in 1993 in response to such treaties and donor pressure (cf Bhadra 2009). In fact, in many instances, policy measures to address gender concerns appear to stem as much, or more, from the need to comply with donor requirements as from demands from water users or the broader political constituency.

One important *hypothesis* of the thesis is that the effectiveness of policy measures to improve female participation in water management significantly depends on *how* gender issues are perceived, framed, and addressed, in all domains.

This, in turn, would shape the space to think, talk, and act about gender (Razavi 1997; Wieringa 1998; Watson 1999; Moser & Moser 2005; Zwartveen 2006a).

For the first domain, I investigated the way gender had been incorporated in development plans and policies of the Nepal government. I looked at how state actors perceived and expressed a gender-based agenda, and how they articulated gender concerns within broader development or water discourses. Were gender issues seen as an add-on to 'business-as-usual' or did they form a part of a larger political agenda to bring about social change?

In short: did policy guidelines address gender equity specifically or were gender issues incorporated to help meet already established water development goals?

Translation and operationalization of policy goals often happen in professional or cultural environments that may not always be conducive to addressing and articulating gender equity concerns (Lynch 1993; Miller & Razavi 1998; Haney 2000; King & Mason 2001; Standing 2007). This draws research attention to the contexts of policy implementation, moving from the culture and characteristics of state machineries to the challenges posed by field realities.

The thesis hypothesizes that the structure, culture, and characteristics of the working environments of state employees importantly shape how gender-progressive measures (quota policy in this case) are implemented. These articulate and sometimes compete with the individual ideas, ideologies, and practices of implementing engineers and state employees at different levels, transforming and translating policy intentions into actual actions in sometimes contingent and contradictory ways.

To understand how policy measures relate to final outcomes in terms of water distribution and differences in access to water, the thesis includes an investigation of how differences in access to water are shaped by (the functioning of) formal WUAs, specifically looking at the difference more female participation in WUAs makes. I examined the functioning of users' organizations, trying to understand how quotas for female participation are dealt with at that level. For instance, I was interested in finding out if and how women make use of the quota system. Also, I wanted to know if they had other strategies or means to ensure access to water. My hypothesis was that powers related to water decision-making were not isolated from wider social relations of power and influence, and they did not just reside in formal institutions.

The overall research question of the thesis is:

How do gender discourses, organizational/professional cultures, and power relations structure the outcomes and processes of planned efforts to increase women's participation in irrigation and drinking water users' organizations?

In line with my distinction of three policy domains, I divided this research question into three sub-questions:

1. How does the government of Nepal discursively construct the linkages between its gender equity agenda and its (water sector) development efforts?
2. How do organizational cultures, individual convictions, and professional identities combine to shape efforts at different levels to implement policy measures to improve women's participation in water management?
3. How does formal participation in WUAs translate into women's voice in water decision-making and their access to water at community and household levels, compared to that of men?

1.2 Conceptualizing policy processes to achieve gender equity in water

I have situated the study of policy in this research in the wider academic field of the 'anthropology of policy' (Shore & Wright 1997). The anthropology of policy argues that policy has become an increasingly central organizing principle in contemporary societies, shaping the ways people live, act, and think. Policies create new categories of individuals such as 'subjects', 'citizens', 'professionals', 'nationals', 'criminals', and 'deviants'. Policies

also influence the way individuals construct themselves as subjects, acting both on and through people as free and rational agents.

If policy is a tool of government administration, it is equally a tool for studying government operations and for tracing the links between different policy domains and different policy actors within the complex policy process.

Departing from the conventional view of policy as a linear model, and following the anthropology of policy, I view policy as a process of negotiations and social interactions by various participants (actors) in different domains, or different contexts of behaviour and practices. Adopting this process model of policy, my study examined how actors involved in water management gave meaning to gender components of water policies. It also looked at how they shaped, embraced, accommodated, resisted, or disregarded gender issues.

To understand policy processes in the water sector in Nepal, the thesis rests on a number of key-pillars theoretically. First, I approach gender equity as integral to and, indeed, interdependent with broader questions of social equity (Zwarteveen 2000). Second, I adopt a view of social change as the making and remaking of society through on-going self-transforming actions and perceptions of a diverse and interlocked world of actors (Long 2001:2). A third conceptual premise of this thesis is its view of water management as consisting of technical, social, and management aspects that are interrelated and jointly constitutive (Mollinga & Mooij 1989; Vincent 1997).

1.2.1 Gender, equity and mainstreaming gender

Gender is both an organizing principle of social life, creating and ordering relations between people in a hierarchical manner as well as a process of giving meaning to and legitimization of social power relations (Zwarteveen 2008:33). Drawing on the work of Harding (1986), I view gender-based social life as an outcome of three distinct processes: gender symbolisms, gender structures, and gender identities.

Social relations (co-)define rights and responsibilities between different gender-based social groups, expressed, for instance, in differential decision-making powers, or in differential access to and control over resources.

Gender-based power relations can be observed in a range of practices, ideas, and representations, including the division of labour, roles, and resources.

Gender relations are constituted by and help constitute such practices and ideologies in interaction with other structures of social hierarchy such as class, caste, religion, and race (Agarwal1994:51). These relations are often unequal, with men having more powers to access and control resources -in this case water- compared to women.

I view planned gender-progressive change as making efforts, foremost, to bridge the gap in men's and women's access to basic resources for livelihood. For water, this means contributing to bring about equal access to domestic water (for drinking and for household

and individual hygiene) and to irrigation water (for subsistence farming and for economic progress). Studies have documented gender inequities and injustices in water management as most clearly manifested in the gap between men's and women's formal access to water, and in the male dominance of water-related decision-making. Views of women as being responsible for water at household ('private') level and men in charge of water at field and water-user association ('public') levels often implicitly have guided the attribution of water rights and decision-making powers in projects and policies (van Wijk-Sijbesma 1989; Zwarteveen 1995; van Wijk-Sijbesma 1998; van Koppen et al. 2001; Bhadra & Karky 2002; Ahmed 2005).

So, to me, achieving gender progressive change in water management is achieving equitable access to water. This importantly hinges on questioning taken-for-granted gender-based divisions and hierarchies. Inspired by the work of Ribot & Peluso (2003), I define access to water as someone's ability to benefit from a water resource (or opportunity) provided (Ibid. 173).

Access is akin to a bundle of powers. Powers of access are normally wielded through a combination of institutional arrangements (rules and rights) and political, financial, and technological means.

My broader conceptualization of equity has been inspired by the work of Sen (1995, 1999), Boelens & Davila (1998), and Fraser et al. (2004). Sen (1995) argued that equity cannot just be measured in terms of (the distribution of) income or primary goods, instead it relates to a composite of overall well-being. This means that an equal distribution of resources does not in itself ensure equity. What also matters in terms of equity, is people's capability to make use of these resources. So, policy efforts to achieve equity need to be sensitive to people's different capabilities.

Fraser et al. (2004), in a discussion of (gender-based) justice, convincingly showed how justice encompasses elements of (political and cultural) recognition as well as elements of representation (participation) and redistribution (resource). That is to say, questions of equity and justice are about who is recognized, who is represented as well as how resources are distributed. She showed that (policy) attempts for more recognition may sometimes work against attempts at redistribution. For this reason, she advocated careful consideration of how (cultural) recognition links to (resource or income) re-distribution (Fraser 1997).

Boelens & Davila (1998) pointed to the fact that interpretations of equity are always subjective and contextual, thereby highlighting the importance of a conscious awareness of the simultaneous existence of different ideas about what is equal or just.

They also pointed to the importance of the question of who defines equity and for whom: people themselves or 'outsiders'.

Inspired by these three reflections, I define gender equity in water resources management as *the recognition of the unequal relationships between women and men in society, and their different needs and capabilities to manage, access, and control water.*

According to this definition, achieving gender-progressive change in water management through public policy measures means *recognizing and accommodating the gender-based unequal relationships, responsibilities, needs, and capabilities (as defined by the users themselves) that co-shape inequities in accessing and controlling water.*

This definition also shows my view of gender mainstreaming. My definition of it is inspired by Zwartveen in the report of Both ENDS (Zwartveen 2006b:7): ‘The definition of gender mainstreaming that is least threatening to the status-quo sees gender mainstreaming as the recognition of existing divisions of labour, rights, resources, and voice. This definition may thus result in adjusting arrangements in water projects, interventions and policies to these divisions. An understanding of gender mainstreaming that is more often used by gender analysts, and one that is adhered to by many UN organizations, explicitly includes objectives of gender equity and recognizes the need for transformative measures to change existing inequities. It acknowledges that sometimes contentious changes may be required to achieve gender equity, such as land- and water rights reforms.’

Accordingly, I have adopted the view that gender mainstreaming (or policy efforts to address gender concerns) should not just consist of integrating women (or gender issues) into an already defined and established mainstream water agenda, but also lead to transforming this agenda to reflect women’s needs and gender concerns better. This means that successful and effective gender policy efforts integrate the concerns and experiences of women as well as men with the design, implementation, monitoring and evaluation of policies, programmes, and projects, so that women and men benefit equally, and inequalities are not perpetuated.

1.2.2 Planned social change

In general, policy measures to address gender inequities are geared towards achieving a more gender egalitarian society, aiming to change unequal social relations over time. For example, water policies of the Nepalese government have recognized the lack of women’s visibility in formal organizations as a problem (and an indicator of gender inequity in water management). Accordingly it has set out to achieve a minimum of 33 per cent female participation in water-users’ committees. To understand this process of transformation, I see the *policy* process as a process consisting of or coming about through the practices of actors.

Inspired by the work of Bourdieu (1977), Giddens (1984), and Long (2001), I am using a theory of practice that calls attention to how *actors*, with their diverse motives and intentions, operate in everyday life to make and remake the world in which they live. Practices are discursively linked to history and culture; they are not static, but change with changes in dominant discourses. Actors’ practices in relation to gender are embedded in and co-constitute wider social gender-based hierarchies, cultures, and structures. They are also related to

discourses and symbolisms of gender and water, including professional and organizational cultures. And, finally, actor's personal gender-based convictions and identities play a significant role.

To explain actor's practices, the concept of agency is often used. 'Agency' refers to the capability or power to be the originator of acts and comprises self-consciousness, reflection, intention, purpose, and meaning (Cleaver 2012). The term expresses that an individual actor has the capacity to process social experience and to devise ways of coping with life even under the most extreme form of coercion (Long & Long 1992:22). In social science, there is a long debate on the relative degree of freedom actors have in choosing courses of action or ways of behaving. Many feminist and gender studies have identified social structures (ideologies, patriarchy, discourses) as a barrier to enhance women's capabilities and agency and hence to their empowerment (Agarwal 1994; Kabeer 1994, 2004).

I instead follow Giddens' theory of structuration (1984) that gives emphasis to the interplay of structure and agency, acknowledging that the two co-constitute each other. I view *actors* and their practices as both reproducing and changing structures through their agential practices. Guided by his classification of self-consciousness (ibid: xxiii), I see implementers as actors who are motivated by three levels of consciousness in response to policy measures to address gender concerns:

- i) unconsciousness (based on psychological/emotional motivators that largely escape reflection)
- ii) practical consciousness (a 'right' way of doing things based on habit and routine, e.g., the routinized habit of following what is prescribed by a senior officer or what has been taught in university training)
- iii) discursive consciousness (expressed in reflective action, e.g., when somebody acts as a result of a conscious decision that encouraging women users to participate in a committee is needed for positive change. Officer then imposes a rule that a WUA committee should have a certain minimum number of women members to make a valid request for support).

1.2.3 Policy domains

In my distinction of the three domains - policy formulation, implementation, and final outcomes, I assume that policies come about and are transformed and implemented in these different domains of interaction, in which people have different perceptions, interests, and professional identities. I use the word 'domain' as defined by Long (2001:57): places of rules, norms, and values that become central to the process of social ordering and to the establishment of certain pragmatic rules of governance.

Practices exist at all levels and domains of the policy process. Policy actors, even within one domain, are not a homogenous group and may not have the same interests and understanding of problems.

In line with the distinction in policy domains, I identify three main policy actors: policy makers (law makers / high-level bureaucrats / political representatives), implementers (bureaucrats and field officers), and users (beneficiaries or target groups). In actual practice, domains are not always clearly distinguishable. There will also be a number of sub-domains within a domain.

Policy formulation and policy makers

In this domain, I analyze how different national policies on water discursively construct the linkages between gender and water. I examine how these in turn link to wider development agendas (Razavi 1997; Schreiner 2001). This analysis is guided by the hypothesis that the effectiveness of policy measures to minimize gender inequities in water development and management in Nepal partly depends on how a particular policy was formulated. What had been considered the most prominent gender concerns? How did these concerns relate to the overall agenda, and what kind of measures were proposed to address them?

I use the concept of discourse to help effectuate this analysis. ‘Discourse’ refers to an ensemble of ideas, concepts, and categories through which meaning is given to a phenomenon, and which is produced and reproduced through an identifiable set of practices (Hajer 2005:300). A discourse frames realities and problems by distinguishing some aspects of a situation and not others.

Two influential studies of development anthropologists have shown how mainstream and dominant discourses determine what are appropriate and legitimate ways of practicing and thinking about development (Ferguson 1990, Escobar 1995). These studies attributed a more determining (and indeed hegemonic) force to one mainstream discourse than I do in this thesis, as I acknowledge there may be more than one discourse (Grillo & Stiraat 1997). In particular, in this thesis I assume that prevailing policy discourses in the drinking water and the irrigation sector differently shape the spaces to think and act on gender, thereby possibly influencing the ultimate effects of these policies on reducing gender inequities in water.

Policy implementation and implementers

Implementers play a key role in translating policy from paper to impacts, or effectuating changes in the field. Studying the (lack of) effectiveness of gender mainstreaming efforts, Moser & Moser (2005:585) argued that a majority of development organizations committed to mainstreaming gender issues after the International Conference on Women in Beijing in 1995 failed because of inconsistencies in their implementation. They found that there is a lack of clarity about how gender mainstreaming translates into practice.

Porter et al. (1999) and Ahmed (2002; 2005) also highlighted the important role of implementers in achieving the gender goals of policies and programmes.

Focusing specifically on policy measures to address gender inequities, Standing (2007) showed how the gender ideology of implementers of health programmes can contradict or

complement gender-based policy clauses, influencing the effectiveness of policy implementation.

Lynch (1993) and Standing (2007) underscored the important role of implementers in contributing to the success and effectiveness of policy efforts. They both argued that the prevailing bureaucratic tradition, often inhospitable to dealing with gender questions, may form an obstruction to realize gender-based changes. Zwarteveen (2008) more specifically suggested that the masculine and technical culture prevalent in water bureaucracies may make it difficult to work effectively on gender.

To study implementers, I have drawn on the work of Lipsky (1980) and Grindle & Thomas (1989). Lipsky highlighted the important role of what he termed 'street level bureaucrats' in understanding policy processes. These 'bureaucrats' are the frontline workers. They work directly with beneficiaries to effectuate policies. Grindle & Thomas studied implementers at different levels of bureaucracy to understand the complexities of policy implementation. In line with these scholars, I consider implementers 'front line workers' who are translating and mediating, thereby shaping policy initiatives between policymakers and legislators on the one hand and users on the other.

I view implementers' actions as being shaped and informed by intentions, incentives, and convictions. I assume that intentions are partly shaped by the vision, mission, and goal of the organization they work for (Ely & Meyerson 2000).

There are various incentives, formal or informal, for officers at different levels to work on gender or to effectuate policy measures to address gender concerns. They include the implicit and explicit ways in which their performance as implementers is evaluated as well as the criteria for judging their professional merits. Such incentives are also shaped by the ways in which gender objectives have been operationalized in shorter-term plans.

It can be hypothesized that, together, they determine significantly the seriousness and attention implementers devote to the goal of improving female participation. In addition, implementers' own gender-based norms and ideas (their convictions, emotional motivators) obviously also come into play in how (well) they effectuate policy measures to address gender inequities.

To understand the way practices are gender-based in this domain, I have drawn considerably on the work of Ely & Meyerson (2000:114). They distinguished three ways in which working practices are given meaning and organized. The first is through formal policies and procedures such as work rules, job descriptions, and performance appraisal systems. Second, they are shaped by the norms and patterns of work. Examples are the organization's or task group's norms about how the work is to be done, the relationships required to do it, and the criteria for competence, commitment, and fit. Third, they are shaped by the narratives and social interactions within which people construct and convey meaning to what they and others do. That is to say: How (well) policy measures to address gender are dealt with, will also depend on the culture of the organization.

By culture, I refer to values, beliefs, and a code of practices. Culture determines how members of a society think and feel, and directs their actions (Haralambos & Heald 1980:3).

I define organizational culture as a process of reality construction that allows people to see and understand particular events, actions, objects, utterances, or situations in distinctive ways (David et al. 2003:548). Macdonald et al. (1997) observed: ‘If organizational structure is the body of an organization, its culture is its personality or soul – referring to the way people deal with each other and the values and beliefs that are dominant’. Culture is importantly made of, and co-shapes, ideas, beliefs, and norms about gender. Handy (1976, 1993) identifies four basic types of organizational cultural ‘styles’: a person culture (individuals working mainly for themselves); a task culture (flexible teams of people focused on tasks), a role culture (clearly defined roles are set out within a hierarchical structure), and a club culture (like-minded people loosely grouped around a charismatic leader).

I make use of these categorizations to describe the dominant values and practices within the policy domain, and to assess how these cultures create space to address gender.

Professional identities form an important part of organizational culture, in particular for those organizations in which one group of professionals (or one discipline) is dominant. In water departments, civil engineers continue to be the dominant profession. In the 1980s, Chambers argued that the *normal professionalism* of the water bureaucracy formed an important barrier to organizational reforms. He defined normal professionalism as the thinking, values, methods, and behaviour that dominate in a profession (Chambers 1988:66). Each profession has its own physical territory and even its heartland where its members feel most secure and most able to exercise their skills, and they feel recognized and rewarded. I assume that the normal professionalism of water professionals employed by the bureaucracy will considerably shape whether and how gender concerns are formulated and addressed. In addition, the reflective consciousness of a person and his or her personal experiences will also shape his or her own identity as well as ideas on gender (Giddens 1984: 41)

Policy outcome and water users

Based on the theorization of Ribot & Peluso on access (2003), I analyse the effectiveness of policy measures to improve female participation in water management by looking at users’ (differential) access to water (in relation to how the management of water is organized). The dominant assumption that guides policy efforts is that women’s participation in water management channelled through a water users’ group is empowering them, and leads to more gender equitable outcomes (Cleaver 1999, 2012). This assumption rather simplistically equates a formal voice with a real possibility to articulate concerns and have an influence in the users’ organization. It also assumes that water management powers are concentrated in the formal WUA. Literature critical of such assumptions suggests to consider institutions as processes rather than as organizations that can be modelled, and points to the dynamic and negotiated nature of institutional evolution (Walby 2003; Zwarteveen et al. 2010; Cleaver 2012).

My research draws on and is informed by such theories of critical institutionalism, which suggest that participation does not straightforwardly translate into more or better access to water. Instead, water distribution, and its institutional regulation, is shaped by social hierarchies, cultural norms, and power relations (Cleaver 1999; van Koppen et al. 2001). As formal decision-making domains may be male dominated, women may prefer to access water through informal channels (Zwarteveen & Neupane 1996; Cleaver 1999).

Where men may gain in status and earn respect through a high public presence, women may lose status and respect instead - at least as women (Meinzen-Dick & Zwarteveen 1998; Bhattachan 2001). The mere presence of customary or formal water management rules does not prevent some users to manipulate the rules to ensure their access to water and authority at the cost of others (Cernea & Meinzen-Dick 1994; Manor 2004). Whether and how people can make effective use of institutions itself depends on their position within wider webs of dependencies and power relations, including their relations with influential WUA leaders.

The entry of new actors - such as women - in formal organizational domains may challenge existing gender-based relations, cultures, and practices. Carson (1999) argued that the experience of gender-related changes may cause feelings of uncertainty, fears of losing power, and anxiety over the unknown. In the long run, this may gradually foster a more conducive environment in which also other women can act. This means that an effective implementation of the gender-based component of water policies demands changes in the social relationships between men and women, which go beyond a mere replacement of men by women or vice versa.

Drawing on these insights, I conceptualize access to water as determined by the social structures of the gender-based divisions of labour and power. This goes together with ideologies, cultural norms, and metaphors, which combine to structure public deliberations, social networks, and water management practices. Rather than just focusing on formal water users' organizations, I studied all arenas in which water use and management were arranged and contested by different (groups of) users, and explored whether and how these were gender-based. Households are one such arena, so my study extended to the analysis of intra-household relations and bargaining processes (Sen 1990; Agarwal 1997).

Water is a politically contested resource, implying that an analysis should be explicitly linking water control with an analysis of social relations of power (Agarwal 1994; Mollinga 1998; von Benda-Beckmann et al. 2000). Participation in water-related decision-making, however, is not just about control over water as a resource, but also over access to and control over related resources, information, and political networks. Holders of key positions in water users' associations may become gatekeepers to supra-community contacts, information, and resources. Hence, I combine an analysis of gender-based and other social power structures and ideologies with an exploration of how women and men themselves experience, understand, and analyse their control over water (Jackson 1998; Zwarteveen & Meinzen-Dick 2001).

I make use of the concept of rights to analyse further women's participation in users' organizations. I see the quota policy as a right for women prescribed by the national policy. A right refers to an authorized claim to a benefit stream, and the social privileges and obligations associated with it (Boelens & Zwarteveen 2002:76). The idea behind ensuring women's rights to participate is that women will voice their concerns in the WUA, so that they have the possibility to influence rules and authorities, ultimately improving their access to water. Cleaver has perhaps been most articulate in questioning this idea (Cleaver 1999).

I propose the concept of 'rights in action' put forward by Boelens & Zwarteveen (2002:80) to understand how the right to participate translates into practice.

Rights can be seen to exist or become manifest in three forms: reference rights, activated rights, and materialized rights. They are respectively similar to categorical and concretized rights as mentioned by von Benda-Beckmann et al. (2000). Reference rights or categorical rights are the rights derived from broader principles, rules, and ideologies that embody notions of fairness and justice and are based on national water regulations, in this case the policy rule to allocate a quota for women users. These rights become activated through a process in which they are transformed into operational rules and procedures to achieve the policy goal. This, for example, includes adopted procedures to disseminate policy information.

A materialized right or concretized right (von Benda-Beckmann et al. 2000; Boelens & Zwarteveen 2002:80) refers to women's actual participation and voice in the users' organization. This framework helps to follow how women's rights to participate in a users' committee as authorized by the government are transformed into practice, which might be partly co-shaped through interactions with customary rights in a pluralistic legal scenario (von Benda-Beckmann et al. 1997, 2000).

1.3 Research methodology

1.3.1 Selection of irrigation and drinking water programmes

For the purpose of the research, I compared irrigation and drinking water programmes. This was based on the premise that these sectors use different development discourses and therefore also differently justify and demand attention to gender concerns (Zwarteveen & Bennett 2005:14). The main objective of irrigation programmes is to increase agricultural productivity and promote the efficient use of water. In contrast, drinking water programmes have as their main aim to provide safe drinking water to promote good health and hygiene. Within the irrigation discourse of productivity and efficiency, attention to gender (or women) is most easily justified by claiming that women are producers and irrigators. Within the drinking water discourse, women's roles as mothers and domestic caretakers tend to be most emphasized in attempts to demand more attention to gender.

Given these different objectives and discourses, I hypothesized that the programmes would have different strategies to address gender issues or improve the participation of women in their programmes. So, a comparison of both sectors would shed an interesting light on how organizational cultures and bureaucratic identities co-shape the translation of gender policy goals into practice.

Comparing the irrigation and drinking water sectors was not meant to evaluate whether one sector was performing better than the other in terms of achieving gender-oriented goals. Rather, a comparative analysis of differences in narratives, discourses, technology, and culture was a methodological tool to understand and interpret better the complexities of planned efforts to address gender-based inequities in water access and control.

1.3.2 Selection of water programmes

I chose to limit my research to water programmes funded by a single donor, as this allowed for tracing the donor's role in shaping policy processes. As explained, the specific ways in which different donors articulate gender-oriented concerns, and demand that gender be included and addressed in the water programmes they sponsor, would undoubtedly show in the implementation and outcomes of projects and programmes.

Table 1.1 ADB funded drinking and irrigation water programmes

Drinking water		Irrigation water	
Programme name	Period /Cost USD	Programme name	Period/Cost USD
First RDWSSSP*	1984-90/ 9.60m	ISP [^]	1989-94/ 36.3m
Second RDWSSSP	1989-95/14.40m	Second ISP	1996-2000/ 29.6m
Third RDWSSSP	1992-97/20.00m	CMIASP ^{^^}	2004 onward/38.6m
Fourth RDWSSSP	1997-03/25.25m		
CBDWSSSP**	2002-11/36.90m		

*RDWSP: Rural drinking water supply and sanitation sector project **CBDWSSP: Community-based drinking water supply and sanitation sector project [^]ISP: Irrigation sector project ^{^^} CMIASP: Community-managed irrigated agriculture sector project, cost refers to total project cost in millions of USD.

Source: ADB 1996a, 1996b, 2004, 2007, 2009, 2012

I focused on programmes funded by the Asian Development Bank (ADB). It has been one of the key funding agencies in the irrigation and drinking water sectors in Nepal since the 1980s. The ADB funded four rural drinking water supply and sanitation sector projects from 1985 to 2003 (Table 1.1) and one community-based drinking water and sanitation sector project 2002. Similarly, it funded two irrigation sector projects from 1989 to 2000, and a community-managed irrigated, agriculture sector project since 2004. The Department of Water Supply and Sewerage (DWSS) and the Department of Irrigation (DOI) are the respective government

agencies working with the ADB in implementing these drinking water and irrigation programmes.

1.3.3 Selection of research sites

Initially, the study had aimed at examining community irrigation and drinking water projects planned for implementation in 2004. However, implementation of these projects was delayed or halted due to the on-going political unrest in the country². Then I decided to focus on earlier investments of ADB in the water sector. These included: the Second Irrigation Sector Project (1996-2002), and the Third (1992-1997) and Fourth (1997-2003) Rural Drinking Water Supply and Sanitation Sector Projects. The water systems constructed as part of these projects were located in the Eastern Development Region (EDR)³ that consists of 3 zones and 16 districts.

While selecting a district for in-depth research, I considered the following parameters:

- the number of sub-projects implemented (the more the better)
- the difference between the number of irrigation and drinking water sub-projects implemented (the less the better)
- the relative increase of sub-projects implemented in consecutive years (more was better) (see Annexe 1).

Based on these criteria, Morang, Dhankuta, and Udayapur districts were identified as possible research sites. Dhankuta is a hill district, Morang a district in the Southern plains, and Udayapur lies between the hills and the Southern plains of the Terai.

A field visit to Morang and Udayapur led to the final decision to select Udayapur district as the site for my study. Dhankuta proved too difficult a research location because of the ongoing conflict. Annexe 2 provides a glimpse of the reality of travelling by road even to Udayapur in 2004 (which is located closer to Kathmandu than Dhankuta).

I selected the Baruwa Watershed in Udayapur district, a C-grade⁴ conflict-affected district (SATP 2012), for the following reasons:

1. Interactions with the community of Udayapur were warm and hospitable, inspiring confidence to carry out field-data collection there. In Morang, I was treated with much more suspicion, probably as a result of the conflict.

² Nepal experienced a violent Maoist insurgency from 1996 to 2007 (Thapa 2003; Lawoti 2007)

³ Nepal is divided into 5 development regions from North to South, namely the Eastern Development Region, Central Development Region, Western Development Region, Midwestern Development Region, and Far-Western Development Region. Each region comprises flat lands called terai, hills and mountains. Further, the country is divided into 14 zones and 75 districts.

⁴ Depending on the intensity of Maoist insurgency in different districts of Nepal, the government had classified the districts affected by insurgents into three categories of sensitiveness: class A, B, and C. 'A' meant the most affected district (SATP 2012).

2. Water was a key problem in the area, either as floods in the rainy season or as a scarce resource in winter. So, the presence of a water researcher was welcomed.
3. The location provided the features of both a hill-water and a plain-water systems. So it provided an opportunity to encounter and look at diverse ecological water scenarios.

In Udayapur district, I conducted an in-depth study with continuous observation and interviews about water for one year. I focused on water systems along the Baruwa River in Triyuga Municipality. I also looked at water systems in Beltar, Basaha, and Katari Village Development Committees (VDCs) in Udayapur. In Katari, I investigated ideas and practices of ‘street-level bureaucrats’, the water implementers at field level. Then I did a special study of the Lamakhola irrigation system in Basaha VDC, since the system had received an award for the best water users’ association among ADB-financed irrigation subproject.

In the Baruwa River basin, there were three irrigation systems: the Upper Baruwa (UBIS), the Baruwa (BIS), and the Bhusune Asari (BAIS) Irrigation Systems. All the three has worked with the District Irrigation Office. There was one farmer-managed irrigation system called Asari irrigation system that I had not worked with District Irrigation Office. There were two pipe water supply systems for drinking water purpose, both initiated with government support: Gaighat (GDWS), and Asari (ADWS) Drinking Water Systems. They used water from the Baruwa River.

Since this study focused on the policy process of increasing women users’ participation in users’ committees, I selected systems for detailed study that had received government intervention at some point of time. For this reason water systems financed by the ADB were singled out, not the farmer-managed Asari irrigation system.

The UBIS and BAIS located upstream in the river basin had characteristics of a hill irrigation system, i.e. irrigating land on one side of the canal. On the other hand, the BIS downstream had characteristics of systems in the plains - irrigating land on both sides of the canal.

All three systems were located near the district irrigation and drinking water offices. This (I assumed) increased chances of government policies having some effect, which could be observed.

So, here was a great possibility to study several systems taking water from the same river with diverse geographical locations and different stages of government intervention. This provided an opportunity to understand and compare from a gender perspective how different water realities (often with their own customary and statutory rules and regulations) interacted with formal projects and policies.

Figure 1.1 presents the research area.

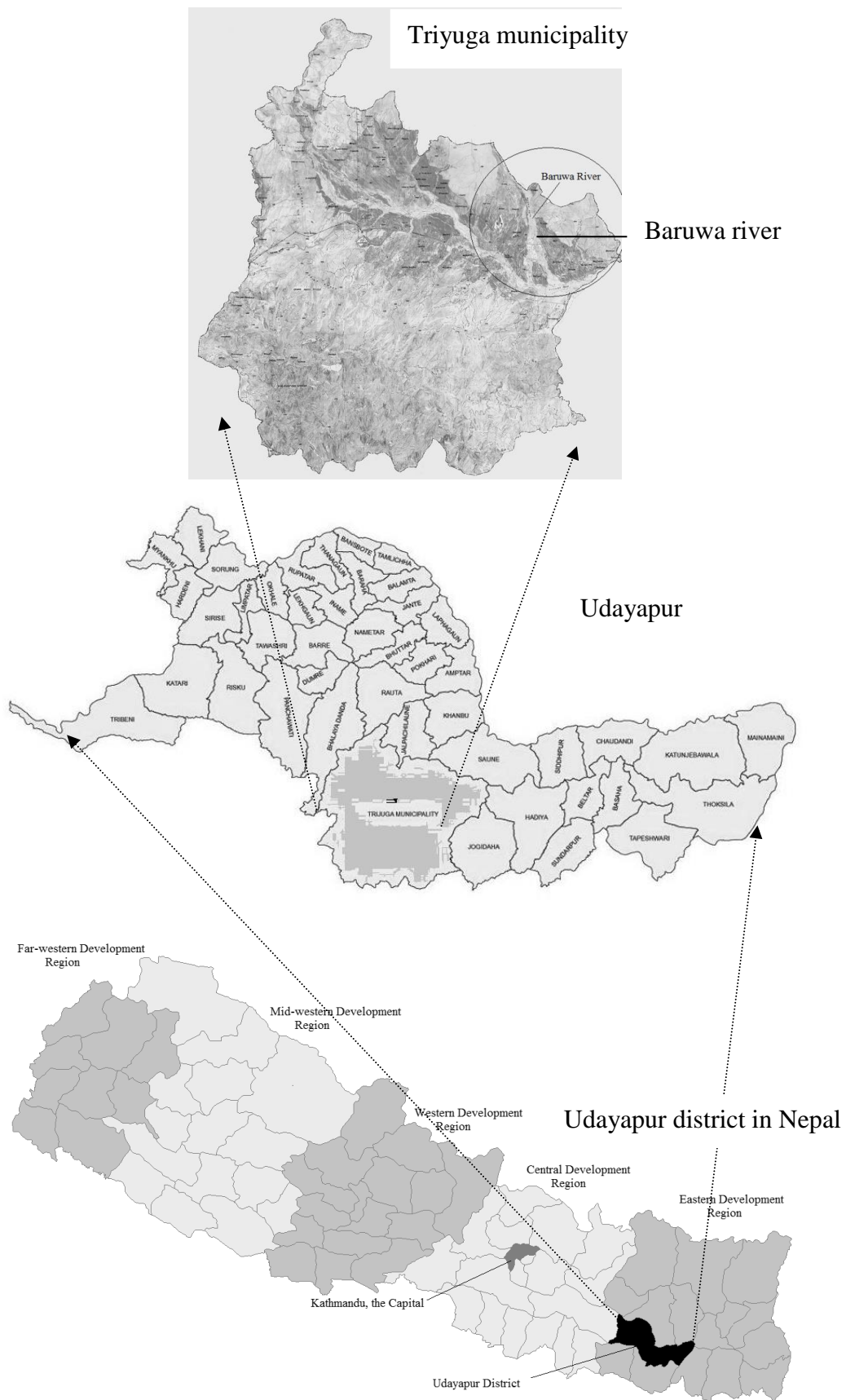


Figure 1.1 Study area: The Baruwa river basin, Udayapur district

1.3.4 Data collection

I collected data over a period of two years (2004-2006) at different levels: users, implementers, and key policy actors.

At the level of users. A combination of different research methods was applied to collect data at community, farm, and household levels: surveys, participatory rural appraisal (wealth and social status ranking, time line study), ethnographic research, and (participatory) observation. Qualitative and quantitative data collection methods were used together. Focus group discussions (FDG) and in-depth interviews were conducted in addition, to produce a detailed understanding of local ways of life.

Methods were adopted explicitly to allow frequent interactions with women, as water decision-making was (at least formally) very much (considered) a man's business.

1. For an ethnographic study of ways of life in the selected area I resided for one year in three different locations in the villages consecutively. One was at the house of the president of the water users' association. This location was selected to get information on local WUA leaders, and to identify active members involved in the WUA. The house was located at the village centre, next to the main road, and provided an opportunity for me to understand daily life in the village. As a paying guest of the wife of the president I could better understand intra-household dimensions, also by helping her in her work. By studying street life I tried to understand people's mobility.

The second place where I stayed was at the house of a daughter of a water user. This provided me with opportunities to understand the struggles of users. Third, I stayed with the family of an absentee water user, who lived at a distance from the command area of the irrigation system and activities of the WUAs, a house located in the Gaighat Bazaar (in town). Here, I closely interacted with the helper of the house-owner (a migrant from conflict-affected VDCs in the district). This provided insights in the day-to-day struggles of the economically poor at the time of the conflict.

2. At the beginning of the study, I conducted transect walks along the river and in the different water systems, walking from the source and intake to the different off-takes and taps. This way I was trying to get an idea of the spatial lay-out of the systems and the village (see further Chapter 3).

3. Since the field research at the time of the conflict was conducted at my own risk, having a research assistant from outside was not desirable. Instead I opted for field assistants from different locations within the study area.

One of them was a local youngster belonging to the *Brahmin Chhetri* caste group (see Chapter 3 for details on caste composition), who helped me for 12 months. He was 18 years and was born and bred in the village, living with his grandmother. He was a victim of the ongoing conflict. His father, a school teacher, had been killed, accidentally, while mediating in a negotiation meeting between the army and members of the Maoist group. The young man

did not have either a direct connection to a drinking water tap or any irrigated land. He was a member of a student union affiliated with a political party and so, he was aware of local politics.

His assistance was useful in understanding the struggle of non-users to access water, he also helped getting an insight into local politics.

The other assistant was a woman belonging to the *Danuwar* caste group of a farming community, who had twelve years of school education.

4. I used surveys to collect quantitative data on migration patterns, household headship, users' attendance in water users' association meetings and their awareness about (the functioning of) users' committees. For this I used a single page questionnaire that took less than half an hour to fill, to collect background information on users (Annexe 3).

Along the left bank of the Baruwa River, the ADWS covered the largest area including users of the BIS, BAIS, and AIS. I used the ADWS users' list to select respondents from 194 households from different locations. Similarly on the right bank, I interviewed members of 160 households registered with the UBIS and/or some from the GDWS.

I had thus interviewed at least 60% of the population of water users' households in the study area.

5. This survey was carried out in the initial period of field research. Towards the middle of the study period I conducted in-depth interviews to complement my daily observations of water use practices. This was also to improve and validate my interpretations of prevailing social hierarchies and dependencies. These interviews were held with 31 households, who were using one of the water systems. They usually took more than an hour.

They not only served to understand water access practices better, but also water-related priorities. They also helped analyse gender-based social norms and values around water management.

I selected my respondents as a representative sample of the population in the basin. For this, a combination of the results of the initial survey (population of users of irrigation system only, of both irrigation and drinking water system users, and of users of drinking water system only) was used along with criteria like social and wealth ranking, landholding (ownership or tenancy), caste, and location (head-ender, mid-system user, tail-ender). I conducted these interviews only after six months of field study.

Beside these interviews, 31 in all, I selected 15 key informants for focused interviews. They included school teachers, women health volunteers, landless tenants, NGO personnel, WUA office bearers, and officials of the Triyuga Municipality.

6. After four months of research at a users' level, I asked four literate water users (with at least nine years of formal education) to become 'event documenters' and keep dairies in which they recorded their daily activities and observations. I used these dairies to validate and

complement my observations on culture, dominant discourses on water access, scarcity, and gender relations. They also proved useful to understand intra-household dynamics. One women user participated for a year, while later her husband joined this diary writing exercise for six months. One documenter dropped out after two months, because he was reluctant to share details of his personal life.

At the level of implementers. To obtain information about implementers' ideas and practices, I used key informant interviews, observations, interviews, and focus group discussion with officials at district, regional, and central levels. At district level, an irrigation official allowed me to 'shadow' him. I followed him in most hours of the day at the office and during his work in the field.

1. I organized five focus group discussions (FGD) as interactive sessions (more like workshops) with officials. The FGDs focused on eliciting their views on policy objectives, increasing women's participation, inequities they saw in the water sector, and their experience with implementing policy regulations.

Two FGDs were organized with officials at the district level of the irrigation and drinking water offices in 2005. Another two was with a chief of division and sub-division offices and with association organisers of those offices in the EDR in 2005. Another FGD was with officials of the irrigation department at the central office in 2007.

2. To understand further the organizational culture of the two main water agencies (DWSS and DOI), I spent time at the head offices to observe day-to-day interactions between officials. SOPHEN, the Society for Public Health Engineers in Nepal, located at the DWSS central office gave me a space for four months in 2005/2006. This space allowed me to observe the office bearers very closely. I also worked closely with them helping them in their work to understand their day-to-day life.

The office allowed my participation in the activities of an ongoing study project on Innovative Decision-Making for Sustainable Water Management in Nepal that organized workshops for stakeholders to discuss participatory methods in the drinking water sector in Nepal. This provided an ideal opportunity to get a closer feel of the workings of the department. At the DOI, I did similar work for a month, complementing earlier observations of the department in 2001-02 as part of my M.Sc. research.

3. At system level, the chief of the sub-division office of Udayapur accepted my request to visit a field site together with an office team. I was able to visit two irrigation systems with them. Together with the field study at farm level, I continued my field work at these offices from August 2004 to August 2005. I carried out formal and informal interviews with association organizers, engineers, overseers and women workers.

4. At central level, I conducted interviews with the chiefs of the planning sections of the DOI and DWSS as well as with sociologists and engineers working in these fields in programmes

and supporting consultancies. I participated in two regional meetings of DWSS coordinated by central office and organised by regional office.

1.3.5 Doing research at a time of conflict

As mentioned, the study area at system and community level was located in Udayapur, a C-grade conflict affected district. Conducting a study at the time of conflict using anthropological and ethnographic research methods was interesting, as it allowed me to observe how discourses on equity were influenced by Maoist discourses. I observed that many - inspired by the revolutionary movement - were challenging caste-based forms of discrimination.

At the same time, I observed how the Maoists had created counter-discourses in their favour to mobilize the community, in their broadcasts on Maoist FM radio channels.

These observations illustrate that social changes in water do not happen in isolation from wider socio-political developments, for they influence ideas and practices with respect to leadership, equity, and justice.

1.4 Thesis outline

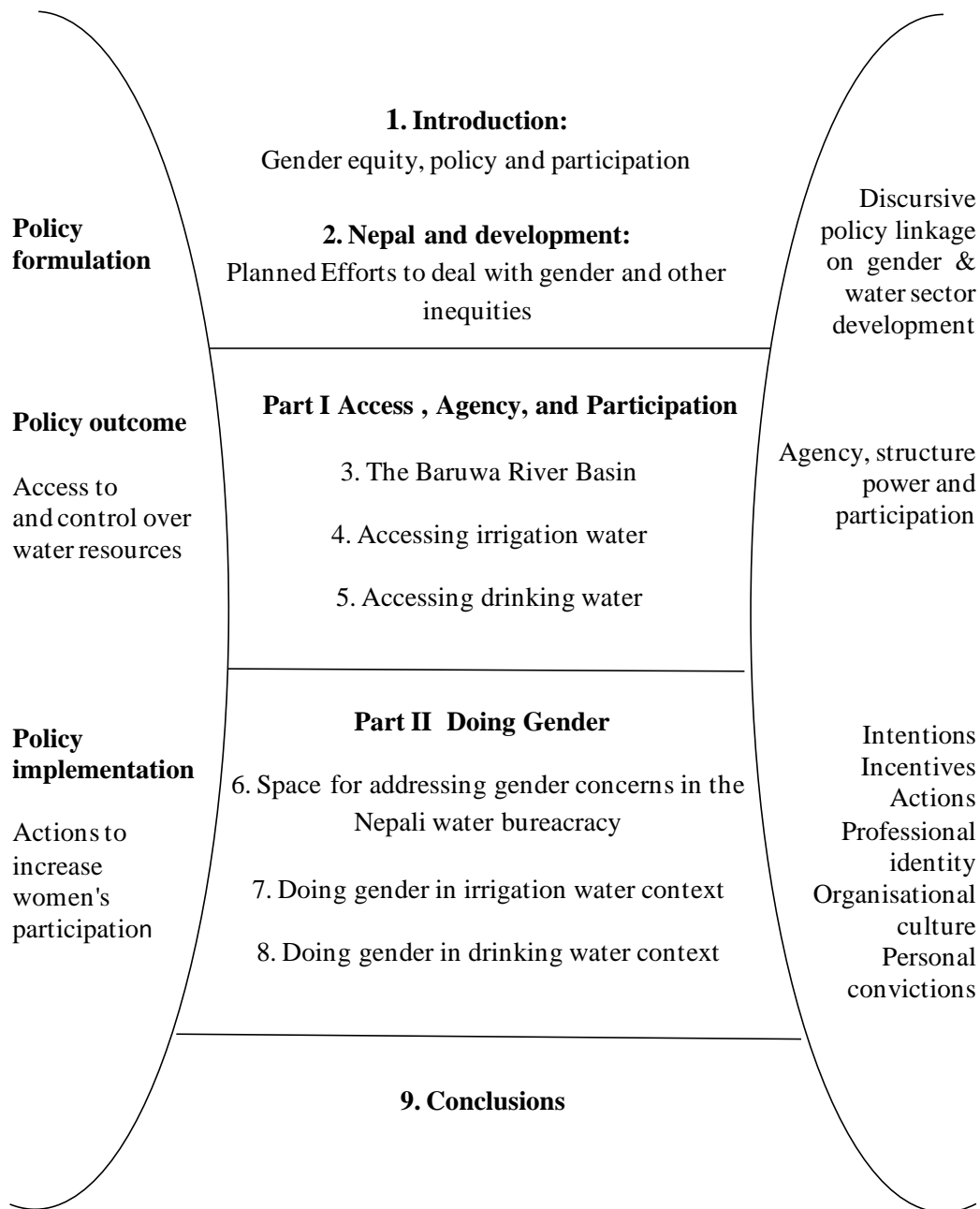
The thesis is divided into nine chapters. I outline the layout of the thesis in Figure 1.2. The column on the left outlines the domains of policy process and chapters organised accordingly in central column. The next column list the concepts used for analysis to understand the complexities in the three domains.

After this introductory and theory-based chapter 1, the next seven chapters present empirical findings. In chapter 2, I analyse the discourses on gender and water sector development in Nepal. The remaining six chapters are organized into two parts.

Part one (Chapters 3, 4, and 5) is about *accessing water* at farm level and explores inequities in accessing water. It is an analysis of policy outcome at users' level. Chapter 3 describes the research area. Chapters 4 and 5 examine irrigation and drinking water systems in the area respectively, with special attention to gender dimensions of accessing water at the level of households, communities, and water users' associations.

Part two (Chapters 6, 7, and 8), entitled *doing gender*, is an analysis of policy implementation. It deals with the policy agenda to increase women users' participation by the irrigation and drinking water departments. Chapter 6 provides an overview of the water bureaucracy in Nepal and examine formal incentive to implement policy on increasing women's participation. Chapters 7 and 8 look at 'doing gender' in irrigation and drinking water contexts respectively. Chapter 9 gives the final discussions and conclusions.

**Gendered participation in water management in Nepal:
Discourses, policies and practices in the irrigation and drinking water sectors**



This layout is inspired by the layout of the book by Boelens & Davila (1998: XXXI)

Figure 1.2 Outline of the thesis

Chapter 2: Nepal and Development

Planned efforts to deal with gender and other inequities

'Development planning...is a process of struggle over concepts, meanings, priorities and practices which arise out of competing world views about the final goals of development.'

- Naila Kabeer (1994:289)

This chapter examines the efforts of the government of Nepal to address gender inequities in development. It particularly looks at how questions of gender are addressed in the water sector.

I wanted to explore how policies shape and frame the ideological and discursive space to articulate and address gender concerns. As such, the analysis of the chapter is an effort to acknowledge that specific attempts to improve the participation of women in water users' associations (WUAs) do not happen in isolation from broader political, economic, and policy contexts. These attempts need to be interpreted as part of broader systems of governance and the organization of democracy.

Since development planning is a process of struggle over meanings and priorities, it is a contested process. There are different ideas and opinions about what development is or should be, about what causes poverty and inequities, and about how these can best be addressed. Ways to recognize and address gender inequities, for instance, differ between various approaches. Some approaches define inequities primarily as problems of exclusion, other approaches see them as stemming from an overall 'lack' of development, and, again, there are approaches pointing at wider structural hierarchies (patriarchy, for instance) causing the oppression of women. Such differences also prompt very different remedial actions, ranging from quota systems and gender-sensitive budgeting exercises to empowerment¹ strategies and more transformative feminist struggles.

These differences and discussions from the larger background to this chapter, which analyses efforts of successive governments of Nepal to address inequities in the water sector over the last five decades. It asks the question: 'How are gender equity objectives (implicitly or explicitly) expressed or recognized in and addressed by public policies, in particular those focusing on water?' This policy review also sets the scene for the chapters to come, as it provides a broader socio-political and policy background to the more specific analyses in those chapters.

¹ For details see Oxaal & Baden 1997; Heyzer 2005

I have used content analysis tools to study how different plan periods have perceived development and progress, specifically examining how these (implicitly or explicitly) considered the link between water development and gender inequities.

The chapter has four sections. In the first section, I give a general overview of the social and cultural hierarchies and inequities in Nepal, looking at the composition of its society.

This overview also shows that gender differences intersect in sometimes contradictory ways with other social and cultural differences, to form a complex web of dependencies and inequalities that makes it difficult (if not impossible) to look at gender (or women) in isolation.

The second section is an analysis of government policies in different periods, focusing on how these consider development and gender. The third section more specifically examines water policy discourses, based on a content analysis of periodic plans and water sector development policies, to find out how they envisage and make sense of the linkages between gender and (water sector) development. In the fourth section, I draw a conclusion about how policies differently shape the discursive space in the water sector to talk about, recognize and address questions of gender.

2.1 Nepal: a country of intersecting differences and inequities

Nepal is a very diverse country, composed of 103 different caste and ethnic groups. ‘Caste’ refers to the Hindu (hereditary) hierarchical system that categorizes people into groups according to a division of labour, roles, and functions. ‘Ethnic group’ is used for those who do not directly fit into or belong to the Hindu caste classification. It refers to people or communities having their own mother tongue and traditional customs, a distinct cultural identity, social structure, and written or oral history (ADB 2010a:3). There are 59 different ethnic groups living in the country.

In 2011, the National Language Policy Advisory Commission had listed 60 living languages in the country (GON 2011a). The census of 2001 records that the country has groups speaking 106 different languages and dialects, of which 79.1% belong to the Indo-Aryan language family and 18.4% to the Tibeto-Burman (Pradhan & Shrestha 2005:2).

Caste and ethnic diversities are mapped onto Nepal's very diverse agro-ecological zones. The topography transforms from South to North. From the flat plains of 60 metres above mean sea level (AMSL) in the south, it rises as high as 8848 m AMSL in the north within a short horizontal span of just 250 km. Over this same stretch, the climate changes from tropical in the south to temperate in the hills and arctic alpine in the mountainous north (HMG 2005a:1). Because of this, only 17% of the total land area in the southern plain called the Terai is suitable for cultivation. Other areas are hilly and mountainous with steep slopes.

This agro-ecological diversity is itself an important source of socio-cultural diversity, stemming from differences in livelihood strategies caused by very different availabilities of natural resources and differences in vulnerability to disasters.

Cultural distinctions and affiliations are not fixed, but are dynamic and often themselves contested, for instance, as part of Nepal's geopolitical struggles with its large neighbours, China and India (see Rose 1971; Whelpton 2005).

But they are also a part of internal conflicts over the distribution of wealth and resources. This is because caste and geographical location do not just account for diversity, but also often provide the basis (or justification) for systems of valuation that inform discriminatory policies or lie at the basis of differences in wealth, income, education, and health.

It is the huge disparities among Nepalese in wealth and political power that have, according to some observers, given rise to the people's movement in 1996 (Thapa 2003; Upreti 2004). This movement also had a distinct influence on gender relations in the country. On the one hand, the movement openly challenged all social hierarchies and inequalities, explicitly including those based on gender. This contributed to more space to discuss and question them.

On the other hand, the violence that accompanied the Maoist movement's actions created its own changes and dynamics, for instance, through the migration of many people from rural to urban areas in search of security². Also, the frequent strikes imposed by the Maoists, called *bandhas*, meant the closure of roads, markets, and public and educational institutions. These, obviously, had a huge impact, as they deeply affected the earnings of the working class. *Bandhas* may also have provoked acceleration in the migration rates of mainly young men to work abroad³, resulting in a feminization of agriculture. In addition, the armed conflict affected the mental health of the overall population, by which women as mothers and wives were particularly affected (Kohrt et al. 2012). There were also significant changes in women's mobility. For instance, more and more women were enrolling into the army. They had also begun doing other types of employment because of their increased responsibilities to earn a livelihood for their families and due to male absenteeism in the family.

An understanding of the meanings and manifestations of social and gender-based hierarchies in contemporary Nepalese society needs to take these recent and older struggles into account⁴. It would also need an awareness of how (markers and boundaries of) socio-cultural

² See Singh et al. 2007, Shakya 2006 for details.

³ See Bhadra 2007:9, Pathak 2005:288, Shakya 2006:8 for details.

⁴ Examples: The Newar community in Kathmandu Valley has the custom of marrying little girls to Vishnu and the Sun (called *Ihi*). This allows a girl to have the physical appearance of a married woman. A noted historian claimed that this practice had emerged to avoid abduction of unmarried Newar girls by Muslim invaders in the 14th century (See Thapa 2011). Similarly, it has been said that polyandry practices in the Northern Himalaya emerged for resource management and survival (see Luintel 2004).

differences themselves are constantly negotiated by and dynamically interact with other societal changes

2.1.1 Class

'Rajasanga binti garincha, barta hoina' - With the King, one should appeal, not argue.

Nepal has been a monarchy since the eighteenth century, when the first Shah King united numerous small states to form 'modern' Nepal in 1768. There are mythological stories of both good and bad kings, stories often told to children as fairy tales. The largely formalized relationships between the King and his subjects provided a general structured pattern of hierarchy that marks social organization in Nepal as such, found even at household level. The quote above is a common saying in Nepal referring to the relation between the king and his subjects. It was part of a minister's speech in a national newspaper, when the monarchy ruled actively in 2005.

The king was described as a caretaker or god, and his subjects were seen as children and worshippers (Joshi & Rose 1966:377; Singh 2010:28). The norms and values defining relationships between the king and his subjects were reflected in the lower levels of administration and within families. Just as at national level the king and his subjects were like provider and receivers, at household level the head of the family was, and is perceived as provider and decision-maker, with other household members (being seen and treated) as receivers.

The king's leadership was strongly gender-b(i)ased, as the position of king was reserved for men only. Parallel to this, the father was (and continues to be) the head of a household, and in his absence his son would take over the head position. Daughters are sent away from the family on marriage. Just as one does not argue with the king, one does not dispute with the father in an ideal Nepalese family.

The same is true for other hierarchical relationships. Younger men and women should not argue with their elders. The continued existence of these hierarchies can be observed, for instance, during festivals such as *Dashain*. It is celebrated by most Nepalese, and youngsters take blessings from their elders when paying them a visit on tenth day of the festival within following five days.

One's formal relation to the king was strictly defined by the caste group one belonged to, which confirmed the class structure and hierarchy in the country. For example, before 1950, only a specific caste group called *Tharghar* could join the King's bureaucracy (Dangal 2005).

The hierarchal ordering of social relationships significantly dictated how people communicated with each other. It also rather precisely stipulated behavioural norms for each group, depending on their relation to the king.

Such hierarchies and norms continue to influence today's interactions between different groups, also determining, among others, what one can say or not in public forums such as

water users' associations. The presence of such norms and hierarchies obviously also influences the outcome of policy efforts to increase (women) users' participation in water management.

Nevertheless, as a result of increasing globalization, these hierarchical social norms and values are changing. This trend had already begun by the Maoist movement that had challenged governance structures (as also the social hierarchies these created and were based on), and had ended the monarchy in 2008.

2.1.2 Caste

'Manisha Thulo Dilale Huncha Jatale Hudaina' - A person attains greatness, not by caste but by one's actions.

A second and related determinant of socio-cultural hierarchies in Nepal is caste. As mentioned earlier, a caste system refers to a hereditary social organization on the basis of profession or occupation. The above quote is a line from a famous Nepalese book *Muna Madan*⁵ written before 1960, in which the writer makes an effort to rouse the public against prevailing caste discrimination in the society.

The caste system came into practice in Nepal at the time of King Jayasthiti Malla from 1380 to 1394 (Keane 2007:276). It was later institutionalized with the promulgation of the National Code 1854 at the start of the hereditary Rana prime ministership⁶ that ruled the country for 104 years. Though Nepal consists of multi-ethnic and multi-lingual social groups residing in different altitudinal regions, with this National Code the caste system became the major formal determinant of social stratification. It became also the main determinant of individual identity, social status, and one's chances in life (Bennett et al. 2008).

The classification was broadly formed by the one based on relative ritual purity derived from the classical Hindu caste system. This organizes people into four *Varnas* (groups): the *Brahman* or priests, *Chhetri* (*Kshatriya*) or kings and warriors, the *Vaisya* or traders and businessmen, and the *Sudra* or peasants and labourers. An additional group technically 'outside' the caste system because of their ritually 'defiling' occupations makes them 'untouchable' by the rest (Bennett et al. 2008:1). The distinction between 'touchables' and 'untouchables' is partly based on norms about water use within the caste system: 'touchables' are members of high caste groups from whose hands it is permissible to drink and take water; 'untouchables' belong to low caste groups from whose hands drinking water is not allowed (Amatya 2006:4).

⁵Muna Madan is written by the Nepalese novelist Laxmi Prasad Devkota, the first education minister of the first multiparty, democratically elected government after the end of the Rana oligarchy in 1951.

⁶Though Nepal was a kingdom, it was ruled by a hereditary system of prime ministership as the executive of the nation and the king as figurehead from 1846 to 1951.

In Nepal, there is another group that does not directly fall into the Hindu caste division - a liquor drinking community called *Matwali*. So they were given a place in the third category of *Vaisya*, and are now known as an ethnic group.

This way, the code incorporated the entire population into the caste classification as part of a broader process of unification and social organization.

The division in caste groups formed the basis for the distribution of (public) incomes and privileges. So it became a source of greater wealth as much as political differences and inequalities. For instance, only some groups were allowed to study and work in the bureaucracy; others were denied such opportunities. Dangal (2005) argued that the domination of *Brahmin* and *Chhetri* castes in the current Nepalese bureaucracy is a result of this historical practice.

The caste system is also patriarchal in nature. For example, a woman after marriage assumes her husband's caste and lives in her husband's house. This custom denies women direct access to family resources and sharply defines their roles in the family. As a daughter, wife, or mother this caste-base creates for them a dependency on men (in father, husband, or son roles).

After the end of the Rana rule in 1951, the national civil code was amended in 1963 at the time of King Mahendra. It formally abolished caste-based discrimination. The new national code viewed all citizens as equal, but inheritance continued to be patrilineal. Even now, fifty years after the formal abolition of the caste system, caste-based discrimination is still widespread in Nepalese society. For instance, it continues to determine institutions around birth, marriage, and death (inheritance). Also, inter-caste marriages, though no longer formally punishable, are still a taboo in Nepalese society (see Sharma 2008; IIDS 2008).

2.1.3 Geographical location

'Pahadi le kammarnakasihudaina, kahamadeshmajhai tauko chhopnu' - A hill woman has to tie a belt around her waist, how can she cover her head like in the Terai

Finally, another reason for the socio-cultural differences in Nepal can be found in the fact that people live in different geographical locations. The above quote contains the words of a hill woman from an Indo-Aryan high caste family. She was explaining the differences between women's clothing and mobility in the hills and that in the plains. In the latter, the practice of covering the head and face (*purdah*) restricts women's mobility.

In general, gender relationships in the hills (for example, in the Annapurna Conservation Area in the western hills) are seen to be more egalitarian in terms of decision making, control over earned income, and mobility (Bhadra & Karky 2003). Also, gender roles are less starkly segregated among hill habitants compared to communities living in the *Terai*.

For instance, the hill community of *Matwali*, gives equal importance to sons and daughters in family rituals⁷. On the other hand, the *Indo-Aryan* (such as the *Brahmin/Chhetries*) and Terai caste groups, and Indian migrants, impose different roles on sons and daughters in rituals of birth, marriage, and death.

The treatment of sexuality is also very different among *Matwali* and *Indo-Aryan* people. Maintaining sexual purity is much stricter for women of *Indo-Aryan* communities. Polyandry is observed among some *Matwali* hill migrants. In contrast, polygyny is high among *Indo-Aryan* groups, and used to be a common practice among the ruling class⁸. Scholars often explain polyandry as stemming from practical survival needs in high mountains (Luintel 2004), whereas polygyny is often linked to considerations of masculinity, or to the desire to have sons when only daughters were born to the first wife. Though the Civil Code of 1963 stipulates that marriages should be monogamous, the fact that polygyny still occurs can be seen as another reflection of the lower position of women in Nepal⁹. Situations of polygyny are often particularly unfavourable for the first wife, who tends to have a particularly low status in the family (Udas 2013).

2.1.4 Socio-economic differences

Differences in wealth cannot be directly attributed to caste, class, or geography, but there are significant statistical correlations between caste, class, and wealth. In the same way, caste, class, and geography together form a grid of how wealth and resources are distributed in Nepalese society. In general, Nepal is a poor country. Data on the percentage of people living below the poverty line in Nepal show it is decreasing over time (Figure 2.1).

However, the income inequality between rich and poor is increasing, as the Gini coefficient of inequality from 1995-2008 indicates. Inequalities in 2010 were about the same as in 1985 (World Bank 2013).

According to the 2001 Census, poverty among female-headed households was 42% of all such households. It was found to be declining in 2008 compared to male-headed households. This was possibly due to programmes especially targeted at female-headed households, or the steady growth of a remittance-based economy, which depends mainly on remittances by men (Hunzai 2010). Female-headed households constitute 13.2% of all households, country-wide.

⁷ See Tiwari (2007) for details on gendered practices of Gurung families, one of the *Matwali* Tibeto-Burman communities in Nepal.

⁸ When King Prithvi Narayan Shah, the founder of united Nepal, died in 1775, his three queens and six concubines sacrificed their life in the pyre in the custom of 'sati' (Teltscher 2006:153).

⁹ The 2001 Census reports that 5.7% of married men in Nepal are living in a polygynous family set-up. Acharya (2003:224) reports that 5.5 percent of the married men in the country lives with more than one spouse. Domestic violence against women is widely reported with a poor status of the first wife in such a family.

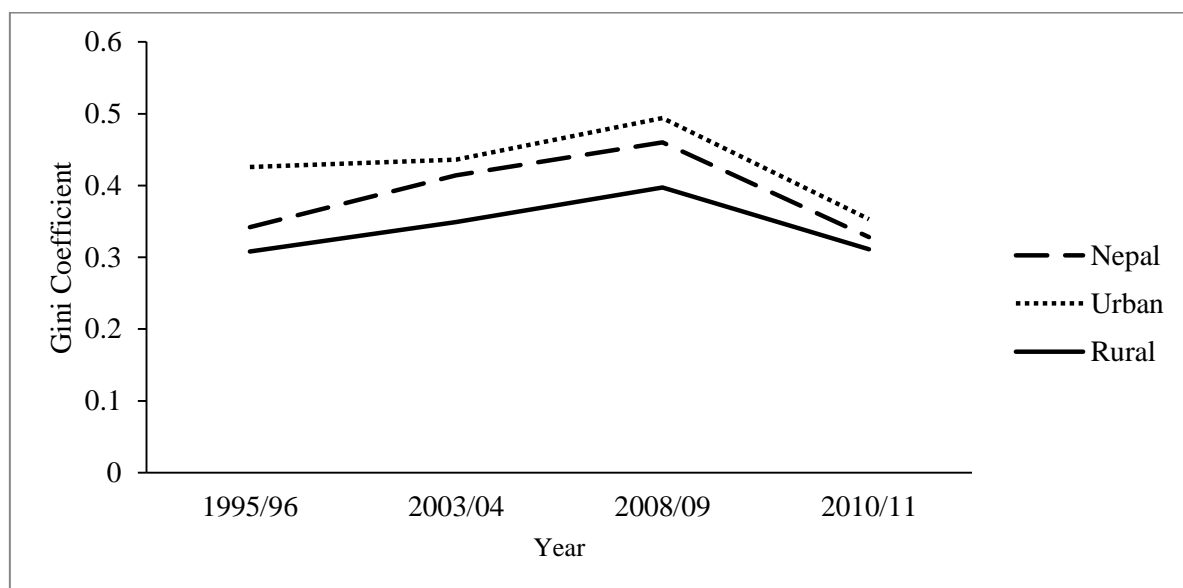


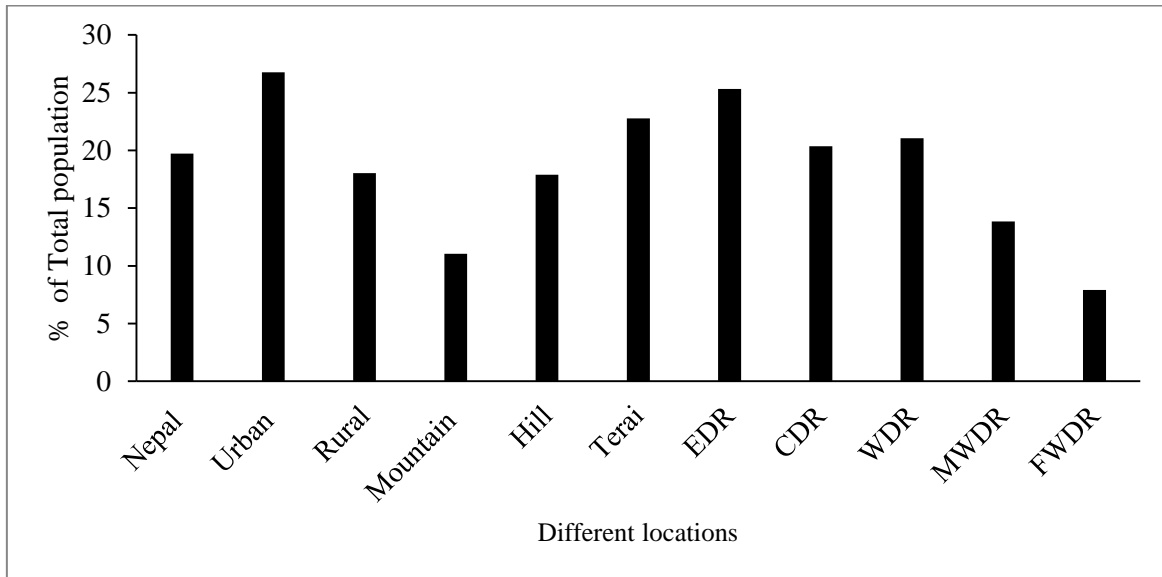
Figure 2.1 Gini coefficient of Nepal

Source: UNDP, 2004; 2013

Yet, there are 13 districts in the mountains and remote hills, where the ratio of female-headed household is more than the national average, on account of very high rates of male migration.

The class-caste differentiation is most clearly reflected in differences in the ownership of land. 47% of households in the country are marginal landowners with plots of farmland of 0-0.5 hectares (GON 2006). These plots account for only 14% of all privately owned agricultural land. In contrast, 5% of agricultural households, who own plots larger than 3 hectares, together own 27% of the total agricultural land (Deraniyagala 2005:54 cited in Lawoti 2007).

Gender-disaggregated data from the 2011 Census indicate that women's ownership of houses, or land, is only 19%, with only 9% owning land. Women's landownership varies between cities and rural areas (See Figure 2.2). The percentage of women owning houses or land, or both, is least among women living in mountainous, rural areas and in the far western development region.



Note: EDR- Eastern Development Region, CDR-Central Development Region, WDR-Western Development Region, MWDR-Midwestern Development Region, FWDR-Far Western Development Region

Figure 2.2: Percentage of women owning house and/ or land of total population

Source: Population Census 2011 (GON 2012)

Access to irrigation facilities importantly determines the productivity of the land, also increasing its value. The access to irrigation facilities is reflected in land holding pattern. The larger the landholding, the larger the proportion of irrigated land one has hold. Figure 2.3 gives data from 1991 and 2001 on irrigated land as a percentage of total landholdings, showing this the trend. It shows that large landowners have a larger share of irrigated land, thereby further increasing wealth disparities.

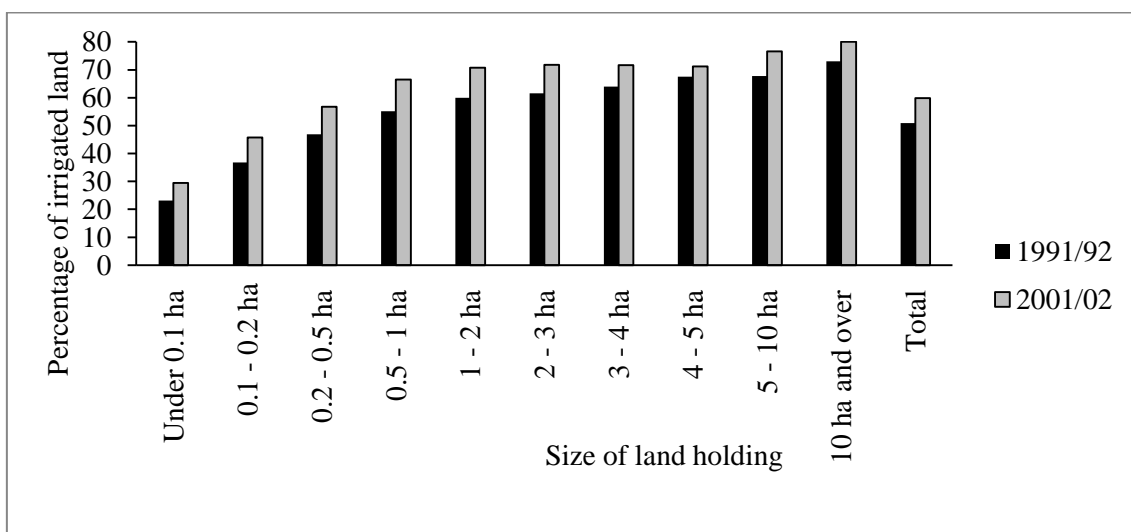


Figure 2.3 Irrigated land as a percentage of total landholdings

Source: CBS 1992; 2002

Overall levels of poverty also vary for different caste groups, with poverty being higher among the lower caste communities. For instance, the size of the *Tharu* (lower caste) population living below the poverty line is double that of the *Newars* (higher caste) (CBS 2005, cited in *Gurung* 2006:74).

Table 2.1 shows that low-caste communities have a lower Human Development Index (HDI)¹⁰. People from high-caste groups such as the *Newar* and *Brahmin/Chettri* have twice as high an HDI as *Dalits*.

Table 2.1 HDI of different caste groups and

Caste	HDI
Newar	0.616
Brahmin Chettri	0.552
Janajatis excluding Newar	0.494
All Dalit	0.423
Madhesi Dalit	0.383

Source: UNDP 2009: 44

As for drinking water, gender-disaggregated data show that Hill Dalits have the lowest access to improved drinking water - only 70% compared to the national average of 82%. While 60% of other caste groups on average have improved latrines, only 4.6% of Terai *Madhesi* Dalits have such sanitation facilities (ADB 2010b:28). This varied access to drinking water and sanitation facilities undoubtedly results in different health conditions and mortality rates.

The continued effect of caste distinctions also shows in literacy and public employment rates. In 2006, 71% of gazetted officers of the Nepalese bureaucracy came from *Brahmin* and *Chhetri* caste groups (UNDP 2009:163). The percentage of women bureaucrats is minimal, with 9.1 of the total in 2003 (CBS 2004).

Table 2.2 Trends of gender inequality in Nepal

Year	HDI	GDI	(HDI-GDI)	Gender Inequality
1992	0.34	0.31	0.033	9.62%
1997	0.46	0.44	0.022	4.75%
2000	0.49	0.47	0.020	4.08%
2006	0.51	0.50	0.010	2.00%

Source: HDI and GDI values are from UNDP 2006, 2009

¹⁰ HDI is a composite index that measures a country's average achievements in three basic aspects of human development: longevity, knowledge, and a decent standard of living. They are measured respectively by life expectancy at birth, a combination of the adult literacy rate and the combined primary, secondary, and tertiary gross enrolment ratio, and the standard of living by GDP per capita (UNDP 2006).

Even though Table 2.2 indicates that gender inequality in Nepalese society is decreasing since 1992, the gap differs depending on caste, class, and region. For example, women's literacy rate is lower among lower caste groups, and lowest among the Dalits (Table 2.3) compared to high caste Brahmin Chhetri. Similarly, more than 70% women from hill Brahmin and Newar caste groups received antenatal care, whereas only less than 35% Muslim and *Janajati* women received this (Bennett et al. 2008:10).

Table 2.3 Literacy rate among women and men per caste

Caste	Women	Men	Average
Brahmin Chhetri	68.6	92.8	80.7
Dalit	24.2	59.9	42.05
All Janajati (excluding Newar)	56.9	79.6	68.25

Source: UNDP 2004

The dropout rate of girl children in secondary education is relatively high among communities in the Terai due to the practice of dowry (Sah 2008:207). In the high mountain regions, the rate of enrolment of girl children in school is low as compared to the rest of Nepal, as they are involved in helping with domestic chores. Gender differences in education form the beginning of larger gender disparities, starting with employment opportunities. A UNDP (2009) study concluded that the weak position of women in society is reflected in high maternal mortality rates, a lower life expectancy, a lower enrolment of girl children in schools, and a high mortality rate among girl children.

These features and figures of Nepalese society show that caste and geographical disparities and inequities can be mapped onto class and wealth differences. And all of these can be seen intersecting with differences based on gender to create complex webs of dependencies that make it difficult to talk about women (or men) as clearly distinct groups. The very meaning of gender, and the extent of gender disparities and inequities, varies with caste, wealth, and location.

2.2 How governments have been dealing with participation and (gender) difference

In my analysis of policy documents on development I was particularly focusing on whether and how social and gender inequities were acknowledged and addressed. In doing this, I take the conclusion of the previous section into account: I see gender as intersecting with other axes of hierarchy and inequality. In this sense, my analysis adds a new dimension to the earlier analyses of Bhadra and Acharya¹¹, which primarily focused on gender as women in

¹¹Bhadra (2001) analysed the influence of global gender and development debates on the development efforts of the Nepalese government. Bhadra (2007) examined the efforts of the government in terms of women's empowerment and gender equality. The article by Acharya (2011) analyses the impact of different approaches to development and gender in Nepal policies over the years.

isolation from other socio-cultural hierarchies.

In 1956, Nepal entered the era of planned development. The end of the Rana oligarchy in 1951 marked the end of the feudalistic government and the beginning of people or citizen-oriented development.

2.2.1 Government plans and policies

After the first period of transition from 1951-1959, Nepal has known three types of administrative systems. First, the single party Panchayat system, introduced by the late king Mahendra, was in place in the country for thirty years (1960-1990). It worked with an active monarchy and public representatives in assemblies in a four-tiered administrative governance structure.

After that, Nepal was governed by a multiparty constitutional monarchy for about 18 years (from 1990 to 2008). Under this system, the King represented the symbol of national unity and the Prime Minister was the head of the government. He was chosen from among parliamentary members elected by the public.

In 2008 came an end to the monarchy, after 240 years. A third governance system came into effect, when Nepal declared itself a federal republic. As a young Republic, Nepal has known a series of interim or working governments and has been struggling to craft a constitution.

Throughout these three periods, development policies were formulated in three main types of national plans: Master Plans, Long-Term Development Plans, and Periodic Plans. The Master Plan provided a broad framework for resource use for development. Examples of Master Plans are the Irrigation Master Plan 1990, the Forest Master Plan 1989, and the Sanitation and Hygiene Master Plan 2011.

Long-Term Development Plans include, for instance, the Agriculture Perspective Plan (APP) 1995-2015 and the National Water Plan 2005-2027.

The APP is aimed at improving the situation of food, shelter, health, education, and security in the country.

The National Water Plan (NWP) provides a vision for water sector development including both the irrigation and drinking water sectors. For irrigation, it aims to achieve year-round irrigation up to 67% of total irrigated land by 2027. For drinking water, the goal is to reach 55% of the population with medium or high level water supply services by 2027.

Periodic Plans are plan documents to guide government expenditures planned for specific periods not extending five years. So far, ten periodic plans and two interim plans have been implemented from 1956 to 2012. In the meantime, sector specific policies, acts and regulations were also put into operation. In the water sector, the legally binding documents are the Water Resources Act 1992 and the Water Resources Regulation 1993. In the context of these policies, the irrigation and drinking water sectors have developed sector-specific acts and regulations that guide formulation and implementation of sector specific programmes and

projects. For instance, in the irrigation sector, the Irrigation Master Plan, the APP, and the NWP are the guiding documents for sectoral programmes in periodic plans.

Figure 2.4 presents a timeline overview of different governments, policies/plans, and international events related to gender.

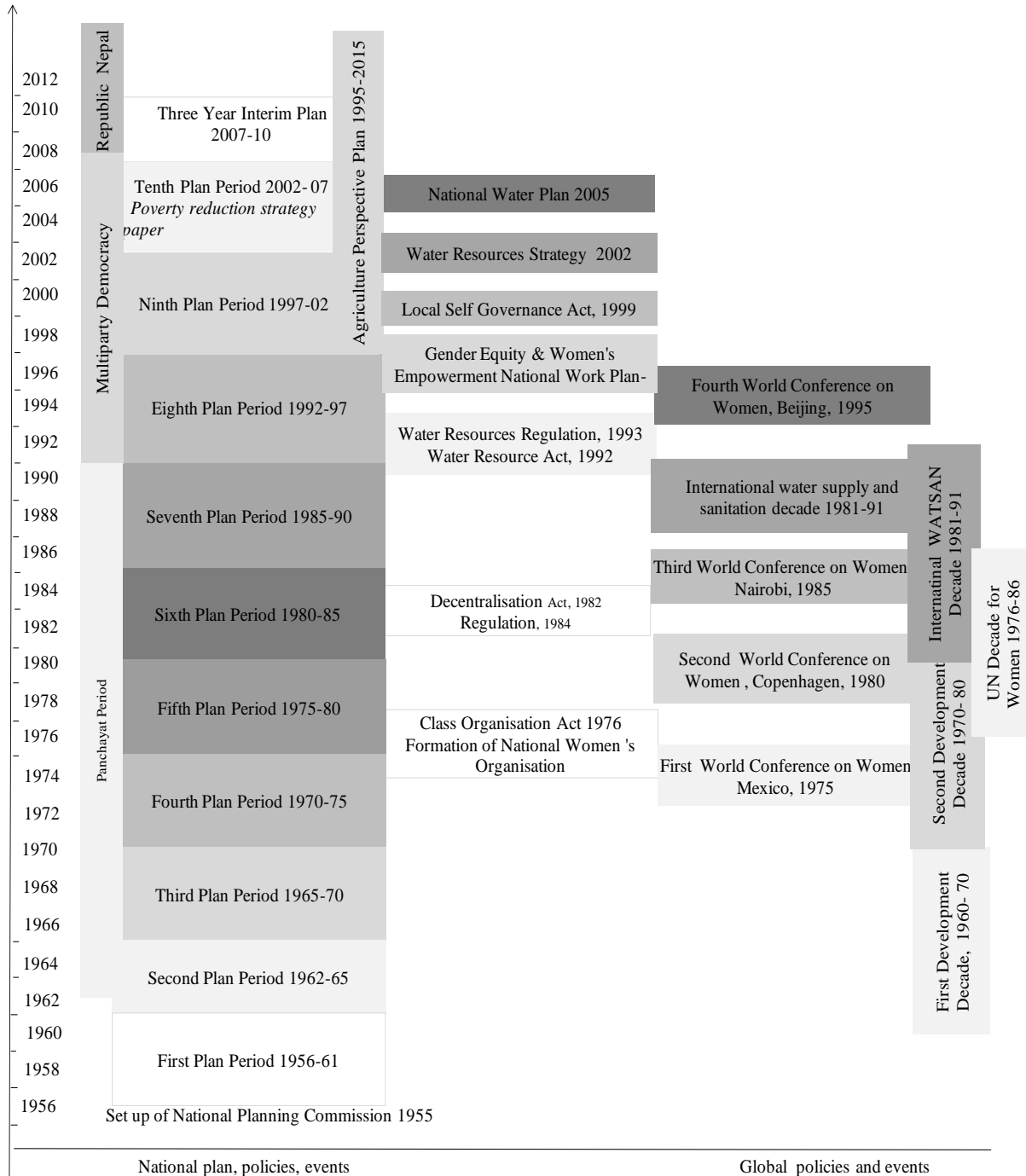


Figure 2.4 Overview of governments, plan periods, legislation, and international gender-related events

2.2.2 Governing and planning development, participation, and equity

In this section, I briefly review the different regimes to gain an understanding of how they envisaged development and (gender) equity, and the linkages between the two. My analysis shows that throughout Nepal's history of planned development, economic growth has been a central priority, with all governments somehow linking this priority to goals of addressing people's concerns as well as equity. However, the three regimes' visions of development are fundamentally different, as are the ways in which they perceived and organized people's participation.

These differences stem from changing geo-political circumstances as much as what Sharma (1992) called the world system condition¹². He referred to the role of external economic conditions in inhibiting and even retarding third-world development (Ibid.: 262). Differences also stem from what civil society voices say, as articulated by the media and through protests by different groups in the country, among others. They also come from the international commitments and treaties that Nepal has signed, especially being a member of the United Nations.

One important aspect of foreign influence on Nepal's development planning is foreign aid. Nepal has been a major recipient of development aid since the beginning of its planning periods and it remains one of the countries receiving the highest amount of foreign aid and loans in the world (Sharma 2000). The water sector is one of the main areas where the government has invested these foreign funds. Government investments in the irrigation sector were 20%, whereas irrigation formed 59.2% of the share of total loans agreed between 1956 and 2000 (Shah & Singh 2001:46). These figures show both the importance of water on the national development agenda, and the high reliance on external funds to realize it.

Panchayat (1960-1990)

It can be said that the Panchayat system has laid the foundation for (discussions on) development in Nepal, introducing a vision popularly known as *Vikas*, 'development' in Nepalese language. What development entailed was contested since the birth of the regime, and formed an intrinsic part of the struggles and debates surrounding attempts to introduce a multiparty democracy. The then king dismissed the first popularly elected government under a multiparty system, instead imposing the single-party Panchayat system in 1960.

He justified this move by claiming that political parties were interested more in themselves than in nation building¹³. At that time, the national literacy rate was among the lowest in the

¹² Sharma (2000) argued that analysis of the development process in Nepal must take into account the penetration of capitalism into South Asia and its subsequent consolidation after the emergence of Independent India.

¹³ According to Hayes (1975:619), the Panchayat is a hybrid, tailor-made system that combined elements from traditional Asian and modern Western political philosophies (cited in Brown 1996:43).

world and life expectancy at birth was only 32 years¹⁴. To many Nepalese, questions of life and death were issues of fate rather than of 'development'. It was only when Nepal started opening its doors to the outside world in the 1950s that many started realising that it was far behind many other countries in terms of transportation, communication, and health facilities. Hence, the Panchayat government started promoting *Vikas* as a vision for both development and nation building, using investments in infrastructure to stimulate economic growth and living conditions, and to unite the Nepalese and sustain the regime – all at the same time (Tamang 2000).

Once Nepal became a member of the UN, it experienced the influence of global development efforts and discourses. Hence, the global discourse on development as 'modernization of traditional practices' promoted by the UN during its first and second development decade, clearly influenced the Panchayat government in conceptualising *Vikas* as consisting of:

- rapid economic growth that would improve the living standards of people by expanding modern infrastructure
- industrialization for employment generation
- educating to create a literate public to enhance the capacity of human resources needed to achieve modern development.

In terms of gender, these efforts considered the family as an important unit for development and promoted increasing the capacity of women, helping them to become 'good mothers' (Bhadra 2009). The concept of mother's groups became popular in Nepal at hamlet level during this period.

At that time also, the policy was amended in favour of women's right to parental property, which used to be inherited only by sons. Accordingly, unmarried daughters could now also inherit parental property when remain unmarried. The early Panchayat regime did have an equity agenda, which mainly focused on land. The Land Act 1964 for instance, introduced land ceilings and measures to secure tenants' rights.

Agricultural development efforts mainly focused on the plains of the Terai, as these were considered more fertile. After the eradication of malaria from the Terai in the 1960s, the area had become a good place to live and work in. So, efforts were launched to settle people from the hills in the plains, to increase agricultural productivity as well as to relieve hill inhabitants from the hard life there.

The emphasis on development as modernization was less in the later period of the Panchayat. In 1975, King Birendra, successor of King Mahendra, proposed that Nepal be declared a Peace Zone following a policy of non-alignment to keep Nepal's foreign relations in balance. At the same time he drew attention to the ethical practices of the country as unique.

¹⁴See Third Periodic Plan document for details.

In the early 1980s, the global development discourse on Basic Needs coincided with the realization that some earlier planned development efforts had failed. The degradation of forests because of the settlement of hill people in the Terai was a clear example of ‘mal-development’¹⁵, just as the degradation of forests in the hills was the result of their nationalization.

Gradually, development came to be seen more as a plan of the people, with an increased emphasis on people’s participation and on meeting basic needs. The earlier ideas about the nationalization of natural resources such as forests and water were abandoned in favour of community management. In 1976, the Ministry of Forestry approved forest action plans that put weight on peoples’ participation (Khadka 2009). The Decentralization Act 1982 and Regulation 1984 were brought into force, which also made the participation of users central. Similarly, working policies on irrigation development focusing on users’ participation were designed in the late Panchayat period in 1989, immediately followed by the Irrigation Regulation 1989 (Sukla & Sharma 1997:12).

The Panchayat regime organized people’s participation in the government on the basis of social class. There were organizations for youth, women, senior citizens, labourers, and ex-servicemen. These groups were expected to represent their problems and visions of development through four levels of administration: village, district, zone, and the national assembly at central level. At village level, the village council or Panchayat was the organization to attend to village level issues. A special space was created for graduated Nepalese, with a graduates’ council to represent them in the national assembly (Brown 1996: 42). The King headed the national assembly as head of the nation.

This model of participation thus pre-defined representative groups of people, based on the problematic assumption that these groups were more or less homogeneous in terms of interests and needs. Although women were identified as a separate social group, they were categorized on the basis of assumed commonalities in terms of their social role or ‘functions’ in society - mothers and wives, primarily. Hence, the recognition of women as a group had little to do with the recognition of gender inequities, even less with an intention to question critically existing gender divisions of labour and position. The strongly patriarchal and hierarchal nature of the administrative system, with control being centralized in the King and the Palace secretariat, further limited the scope to acknowledge, question, or address concerns about social and gender inequities.

The multiparty constitutional monarchy (1990-2008)

The multiparty monarchy also roughly equated development with economic growth (like the Panchayat system), but it gave higher importance to poverty reduction. The Tenth Plan of the country was drafted as a poverty reduction strategy paper. Emphasis was on programmes targeted towards disadvantaged communities categorized as ‘poor’. In addition, greater

¹⁵ These are some of the (failed) outcomes of modernization. See Giddens 1990.

emphasis was given to people's participation. Though the Panchayat regime had designed various acts and policy plans for people's participation in development (see Dhungel 2004 for details), the critique was that the government did not practice this policy.

The multiparty democracy perceived development more broadly as participation of the people in all sectors. Policies were amended to make this possible. The idea was to promote people's participation in the government based on their representation in ideology-based political parties. At village level, village development committees (VDCs) became the local governing body. They were equivalent to the village councils of the earlier period, but were represented by elected members of political parties.

Different from the controlled and centralized governance system of the Panchayat government, the multiparty monarchy promoted an open and liberal environment allowing people to voice their opinions and concerns. Its development approach was in line with this liberal philosophy. It set out to promote economic growth by creating an open market. This led to the growth of private sector initiatives in various sectors, at the same time providing opportunities for rebellious activities to grow (see Lawoti 2007).

In terms of gender, the government recognized the problem of women's lower visibility in the public domain. In remedy, they introduced minimum numbers or 'quotas' for women at various administrative levels. These ranged from village wards that formed VDCs, to the parliament represented by elected members of political parties and within each party. These women were expected to articulate the concerns they experienced as a group. So, the assumption was that women would share needs and interests *as women*. This was and is a problematic assumption, as high-caste women from the hills have little in common with low-caste women from the Terai. Even what it means to be a woman would vary, depending on one's caste and place of birth.

Also, the liberal and market-based approach to development of the multiparty governments was implicitly based on the idea that people's individual merits and efforts explain their economic success in life. That meant, there was relatively little attention to existing structural inequities that were deeply entrenched in social institutions and structures. Allowing all people to benefit from market-based development opportunities would require some remedial measures to create a level playing ground. In the absence of such measures, marginal communities and individuals found it difficult to participate in market games, and were vulnerable to market exploitation.

The Republic of Nepal (2008 onwards)

The vision of development of the Republic of Nepal is *Naya* (New) *Nepal*. It means by this a prosperous, modern, and just Nepal (GON 2007a:26), giving emphasis to both economic and social development. Different government ministries prepared vision papers to operationalize their perception of *Naya Nepal*. One is the Ministry of Physical Planning and Works, which published their Vision Paper 2007 with the subtitle 'New Physical Infrastructure- Foundation

of New Nepal' (GON 2007b). After Nepal became a republic, the then Maoist leader argued: '...We succeeded in political revolution, now we need to achieve economic revolution.' This shows that economic growth and infrastructure development as core elements of planned development, remained so in the Republic of Nepal.

The importance of infrastructure is reflected in removal of the Ministry of Water Resources into two, to form the Ministry of Irrigation and the Ministry of Energy in 2009. Some people were unhappy with this restructuring, because they saw a real danger in the government focusing on the economics and efficiencies of water management to the neglect of questions of conservation, sustainability, equity, and justice. Also, some argued that the restructuring was motivated more by the economic interests of political parties than by a holistic view of the water sector development (see Adhikari 2011).

The Republic of Nepal has given more attention to marginalized communities than any earlier regime, and also has made efforts to mainstream gender in its development activities. Accordingly, a gender equality and social inclusion policy was formulated in 2010. It aims to institutionalize gender mainstreaming processes with the formation of different committees and forums that would have a representation of women, Dalit, and ethnic groups, and gender-sensitive budget disbursements (Acharya 2011).

With respect to participation, the approach of the Republic on public participation is ambiguous, because the first constituent assembly has been failing to draft a new constitution since 2008. Nevertheless, it did adopt a more pro-active and planned policy of inclusion and equity, explicitly aimed at improving the representation of marginalized groups in policy formulation. Under strong Maoist influence, inclusiveness and equitable participation in government planning by all members of the Nepalese nation was given high importance. For instance, in an election conducted to form a constitutional assembly to draft the new constitution, explicit efforts were made to include representatives of different marginalized groups, in addition to party representatives. These were identified on the basis of caste, ethnicity, gender, and physical ability. So, women were considered a marginal group, next to disabled people, for instance.

This retrospective of development and participation under different political regimes of Nepal shows how participation slowly evolved from being seen as largely a functional question (of different professional groups forming the government) to a question of political democracy.

In addition, ideas on women have changed. From having been mainly targeted as mothers - who needed to be taught about nutrition, health, and hygiene, - women are now clearly part of a wider development agenda as an important gender equity concern.

2.3 Policy narratives and gender in water sector development

Did these perceptions of development and gender inequity appear in water policies, and how? How were they operationalized in periodic plans and related water sector policy documents?

To understand this, I made a content analysis of such periodic plans and water-related policy documents. I examined these documents through an analysis of the table of contents, plan objectives, and chapter contents. (Annex 4 gives further details of the analysis of periodic plans; Annex 5 gives more details of the analysis of irrigation policy documents and Annex 6 gives more details of the analysis of drinking water policy documents).

I grouped the periodic plans from 1956 to 2010 into four periods, based on their narratives on women and gender issues and water sector development, and on how they link women's issues to social justice and development:

1. Period 1956-1980: Women as mothers
2. Period 1980-1997: Women are needed to achieve development
3. Period 1997-2007: Women's participation for gender equality and equity
4. Period 2007-2010: Gender mainstreaming and inclusion

2.3.1 The period 1956-1980: Women as mothers

This period covers Periodic Plans One to Five, implemented under the Panchayat regime. I clustered them as not one identifies gender discrimination as a development problem. Economic growth, increased agricultural productivity, and infrastructure development (primarily roads, telecommunication, irrigation, aviation, and drinking water) were the key development goals. Plans in this period focused on the problem of the lack of human and financial resources in the country. Plans One and Two had chapters on training, while Plan Four had a chapter on developing the Nepal Engineering Institute, recognizing the lack of engineers for infrastructure development. The water sector development plans envisaged the expansion of water infrastructure as the domain of skilled and educated experts, with ordinary citizens just existing as beneficiaries.

This period considered the household as a unit of development. Women were mainly recognized as mothers, and programmes were designed to improve women's capacity accordingly. Gender-based inequities were not recognized as a problem for development, nor did this regime consider altering existing gender roles a development goal.

Preaching specific gender norms, it planned separate schools for girl children, as well as the recruitment of women teachers to increase the enrolment of girl children in schools. In addition, vaccination programmes targeting mothers with children and classes for mothers on neonatal care were planned. As Tamang (2000) concluded, the Panchayat system institutionalized state patriarchy and promoted the image of women in Nepalese society as homemakers, who were responsible for the health and hygiene of other household members.

While there were efforts to address class inequities in land ownership and discrimination based on caste and religion, gender inequity was not considered a development problem. The plans did not spell out how class inequity was gendered, nor were gender dimensions of unequal access to land recognized. Reflecting on how plans in this period visualised the

household as unit of development, they did not consider intra-household issues a problem.

The Third Plan observed in its 'objectives' to achieve 'social justice':

'If the benefits (of development) are secured only by a small group, the active support and cooperation of the people cannot be secured.' (p:10)

It indicates that the concern to tackle social inequity was primarily linked to the need for securing political support for the regime. It further says:

'The land reform programme is one major measure designed to improve the economic condition of the people of Nepal. The progressive direct taxes which have been introduced are also designed to distribute benefits more widely. The Muluki Ain, a legal code designed to eliminate individual distinctions based upon caste and religious distinctions, was adopted in the Second Plan and will be supported vigorously in the Third Plan.' (p:10).

The document further explained social justice as:

'Social justice covers more than an equitable distribution of income and land ownership. Education, health, and other social services also help raise the living conditions of the people.' (p:10)

The Fourth Plan continued this objective and emphasized the regulation and participation of people through Panchayat processes of planning and implementation. The chapters on irrigation and drinking water did not talk about participation of people, because such programmes would be implemented by departments other than the Panchayat. The irrigation chapters mentioned expansion goals for irrigation systems, focusing mostly on large irrigation systems in the Terai, to meet food security and economic goals. The initial plan period attributed less priority to the drinking water sector, although there were initiatives to construct water supply systems in urban areas.

In these five plan documents, not one makes any mention of the users of irrigation and water supply systems. As Acharya (2011) noted, the then (water sector) development did not visualise users or people as having a role in (this sector) development. This had to do partly with the top-down government approach in the sector, which considered water works as construction to be done by educated experts. This notion is visible in one of the first water related policy documents the '*Irrigation, Electricity and Related Water Resources Act 1967*'. This document reflects the idea that water related facilities are and should be public, to be constructed and operated by the government. The only responsibility of users, as mentioned in the document, is the payment of the water service fees (money) (see NPC 1992).

In addition, in this period regional development was planned by organizing the country into four development regions, and agricultural pocket areas were developed with specific

agricultural specializations¹⁶. Further analysis indicates that this plan was first and foremost aimed at economic growth, even though the Fifth Plan introduced a concept of basic needs based on felt needs. Also, these plans did not clearly chart out issues of regional inequity. Rather, economic growth was assumed to meet the basic needs of the people, hence was assumed to achieve equity.

Table 2.4 summarizes key features of the Plans in the period 1956-1980, and how they address gender-based water inequity issues.

2.3.2 The period 1980-1997: Women's participation to achieve development

This period includes three plans - the Sixth, Seventh and Eighth plans. During this period the Water Resource Act 1992 and Regulation 1993, the Irrigation Policy 1992, and the Rural Water Supply Policy and Guidelines 1993 were enacted (see Annexes 5 and 6 for details on irrigation and drinking water policy). Of these three plans, the Sixth and Seventh were implemented during the Panchayat regime, while the Eighth plan was the first plan of the multiparty government. I clustered them as they are similar in the way they viewed women in relation to development goals.

Both economic development and equity concerns were reflected in these plan documents. The objective of the Sixth and Seventh plans were to increase productivity and productive employment. They also aimed at meeting basic needs i.e. needs for food, fuel, drinking water, basic health services, primary education and vocational adult education, and basic transport facilities. Similarly, the Eighth Plan objectives were to achieve sustainable economic growth, poverty alleviation, and reduction in regional imbalances. Community participation was the strategy adopted to implement public works, especially for infrastructure development, partly also to meet the cost of construction works. Equity in the first two plans was conceived to be addressed through a basic-needs approach, later linked to efforts in poverty alleviation and regional balance.

Gender concerns appeared in the plan documents as concerns about women - in the Sixth Plan as a national level policy and in the Seventh and Eighth as separate chapters on women. Unlike earlier plans, all three plans related women to broader development goals. According to Bhadra (2009), placing women's concerns in national plans and policies was the result of the engagement of Nepalese bureaucrats and others in international meetings on women at that time. Indeed in 1975, Nepalese delegates attended the first world conference on women

¹⁶These regional development plans promoted specialization in livestock improvement in the northern region, horticultural development in the central hills, and food-grains and cash crop production in the southern parts of the country. They provided a basic framework and guidelines for regional development based on the varied topographical conditions, natural resources, and climate patterns of the country.

Table 2.4 Features of the First to Fifth Periodic Plans (1956-1980)

Development vision	Women	Caste	Class	Regional issue	Irrigation	Drinking water
Economic growth & social justice, infrastructure development, human resources development, people's participation through Panchayat, household as a unit.	No separate chapter on women. Chapter on health, education and training mention women's roles as mothers; focus on enhancing women's capacity as a mother, do not challenged gender stereotypes.	Address issues of caste and religion-based discrimination with amendments in the National Legal Code.	Differences in land-ownership recognized as problem of justice & addressed through Land Reform initiatives	Region-based planning: livestock in high mountain areas, horticulture in hills, cereal production in the Terai.	Prioritized sector since 1 st Plan; focus on expansion of irrigated land to increase productivity, irrigation infrastructure, funds, surface irrigation systems in the Terai; no mention of users.	Realized only since the 2nd Plan period for better health & hygiene, emphasised on drinking water and sewerage networks in urban areas; no mention of users.

Table 2.5 Features of the Sixth, Seventh and Eighth Periodic Plans (1980-2002)

Development Vision	Women	Caste	Class	Regional issue	Irrigation	Drinking water
Economic growth, equity concerns addressed through basic needs programmes, focusing also on poverty reduction and regional balance.	A section & chapter on women, aimed at increasing women's participation in development activities to achieve economic growth, no mention of women's needs in development.	No specific attention to caste differences.	Chapter on land reform missing in Seventh Plan, some attention to the poor.	Emphasis on regional development through rural infrastructure and diversification program	Expansion of water systems, participation of private sector and people mentioned, involvement of users mentioned to meet costs, no mention of gender.	Expansion of water structures, drinking water provision linked with basic needs as well as women's participation

in Mexico City. Similarly, Nepal participated in the UN Decade on Women that emphasized issues of equality, development, and peace (Bhadra 2001).

The trend really began with the Sixth Plan, which had a paragraph on women in its objectives and strategies, presenting a policy to *Promote Women's Participation in Development Work*, seeing women's non-involvement in economic activities as a problem for development. The section observed:

'Women are estimated to constitute 48.9% of the population. But owing to lack of education, poverty, ignorance and the like, they have not been able to participate wholly in development works. It is, therefore, imperative that the womenfolk be given necessary education and training so they can pull their weight in the great task of nation-building.' (p:20)

Considering the problem, the plan further perceived the participation of women as a tool and strategy to bring women into economic development:

'Although the role of the women in such economic activities like agriculture and cottage industry has been quite significant, the number of women who are economically active, as a matter of policy, be gradually expanded and the scope of their participation also be widened as much as possible.....If existing laws do, in effect, impede women's participation in development works, they will be suitably amended to enable them to play a bigger role in development efforts and to give (provide) a wider horizon of employment for them (women).' (p:20)

The Seventh Plan also focused on women and included a chapter entitled '*Policy on women's participation in development*'. Although a line in the chapter mentioned the socio-economic status of women as an indicator of development, the following lines posit women's non-involvement in economic activities as a cultural problem

'The women of Nepal have not been able to fully take part in the development activities because of no education, ignorance and poverty. The superstitions prevalent in the society and negative thinking have been major obstacles in mobilising women to participate.' (p:189)

The Eighth Plan continued this strategic focus and perception with a chapter entitled '*Women in Development*', which began with a similar note on women being a problem for development:

'According to the preliminary result of census of 1991, the population of women ismore than fifty per cent of the total population. Nepalese women have been unable to make the expected contribution in development activities due to illiteracy, poor health, poverty and a traditionally conservative attitude towards them.' (p:409)

These narratives of the period perceived the status of women and their non-involvement in paid work as a problem for development, reflecting a view of women as ignorant, and

illiterate. It did not recognise that women already did contribute significantly to development, even if much of this was through unpaid labour. The official narratives addressed women as needed for already defined development targets, rather than addressing women's concerns and needs in development for their own sake (which I have formulated in this thesis as gender equity).

The Eighth Plan - the first plan of the multiparty system - adopted a framework of users' participation in water sector development. Accordingly, the Water Resources Act 1992 and Regulation 1993 were enacted providing guidelines on licensing the use of water resources by individuals or groups of beneficiaries. For a collective use of water resources, Water Users' Associations (WUA) were to be formed, defined as water users' associations registered under the prevailing law with the objectives of construction and operation of the system. Users' associations would be authorised to initiate, develop, and manage water systems at local level. The policy thus suggested the devolution of power to users for water management at local level. Its expectation was that the WUA would act as an efficient and transparent democratic institution at local level, which would ensure equal access to water to its members. The document stated that the users should hold general assembly meetings at least once a year, in which financial and other important management details would be discussed. WUAs needed to be registered with the District Water Resources Committees (DWRC). These were formed by representatives from the line agencies of irrigation, drinking water, forestry, and electricity; the district development office; and any other organization working on water in the district. The DWRC was to regulate the sustainable use of water in the district, prioritizing the use of water first for drinking over irrigation and others.

According to the Act and the Regulation, the WUA had to submit an audited report to the concerned authority every year and regularly renew the organization. This suggests that, though the policy envisaged the WUA as an autonomous body, the association was not only accountable to its users but to the government as well.

To conclude, the WUA was crafted as a legal body to look after the issues of water allocation, distribution, conflict resolution, and overall management at system level with an expectation of users' participation. It was also expected that the WUA would ensure individual water rights. In all this, the role of the state was to monitor and check the functioning of the WUA.

The Eighth Plan equally emphasized women's participation in different sectors, but this was not visible in the Water Resources Act and Regulation. The Eighth Plan document mentioned women's contributions to agriculture and forestry, but not in irrigation and drinking water. The chapter on drinking water and sanitation did refer to women's participation, though, commenting for the first time that such participation would lead to programme success, but without explaining how:

'In view of the fact that drinking water and sanitation programmes in the rural areas cannot be successfully implemented and maintained or repaired without the participation of women, women's participation will be sought in these programmes.' (p:363)

Similarly, the Eighth Plan had a section on sanitation, for the first time put together with drinking water (and mentioned as sanitation rather than sewerage provision). It mentioned the importance of involving women in sanitation to achieve national goals on sanitation practice. These references to women show a continued perception of women primarily as mothers and housewives.

'As women can play a significantly effective role in stimulating the common people towards health education and sanitation, such programmes will be conducted through female workers.' (p:368)

There was no mention of women or gender in the chapter on irrigation in the Eighth Plan. However, this plan did have a chapter on 'women in development' mandating compulsory women's participation in users' committees:

'Women's participation will be encouraged in the formulation and implementation of rural infrastructure programmes in irrigation, drinking water and road construction. For this, women's participation will be made compulsory in users' committees.' (p:463)

These concerns for women's participation were influenced by international events and debates. The chapter on women in the Eighth Plan says:

'A national action plan was prepared for the development of Women in accordance with the declaration of the International Year of the women 1975 A.D. For the development of women, this action plan has specified the areas of education, health, employment, agriculture, cooperatives and legal matters (where women can participate) and stated the basic objectives and policy measures for the development of women.' (p:461)

To increase women's participation in development, micro-credit programmes were launched for women and the rural poor. The plan addressed regional disparities with the promotion of programmes for rural infrastructure and economic diversification.

It considered location-specific hardships and socio-economic conditions in its plans for cost sharing of water programmes and allocated special provision for disadvantaged communities as follows:

'In view of the high priority given to people's participation in the Eighth Plan, ...in remote areas and in areas inhabited by backward communities, a minimum of 5 per cent of the project cost will be borne by users in cash, kind or labour.' (p:365)

In summary, plans in this period sought the participation of the community in general and women in particular in irrigation and drinking water programmes (as well as in other development activities), for the success of the programme, based on an efficiency approach.

Accordingly, both the irrigation and drinking water policies formulated at different times in this period have set quotas for women participation (for details see Annexes 5 and 6 and Udas 2012). However, the water policy documents prescribed the need to involve women without explaining how their participation would help reduce gender inequities. The same gap and

ambiguity is observed in all water-related chapters in this plan period.

Table 2.5 presents a summary of features of the periodic plans with respect to efforts to address gender equity in irrigation and drinking water sectors.

2.3.3 The period 1997-2007: Women's empowerment, equality, and participation

This period perceived development as poverty reduction, adopting a participatory approach to involve users in its programmes. Accordingly, women's participation was sought in every sector including irrigation and drinking water, based on the idea that women's non-participation in development activities was a major development and equity problem. Different from earlier plan periods, increased women's participation was directly linked for the first time to goals of achieving women's development, rather than just water sector development. At least, the drinking water sector linked women's participation to a reduction of their workload and to programme sustainability. In the irrigation sector, this was not further specified. Rather, both sector plans stated in general terms that increasing women's participation in irrigation and drinking water committees would help achieve women's development.

This period included the Ninth and Tenth Periodic Plans of the multiparty government. I clustered them, as the periods looked at women's empowerment, equality, gender mainstreaming, and equity in relation to development in similar ways. The Ninth Plan promoted actions for women's empowerment and equality while still considering women as an ignorant, illiterate, poor, and deprived group. Also, the notion that increased participation of women would accelerate economic growth was still present. The Tenth Plan viewed women's issues as human development issues and emphasized the need to mainstream gender in all sectors.

The Ninth Plan had a subsection on Gender and Equality within a chapter on *Women and Youth Development*, showing a focus on issues of gender inequality included in the broader themes of social services and social security. The Ninth Plan observed:

'...Women are still found suppressed, exploited, neglected and forced to live an insecure life because of illiteracy, ill health, poverty, orthodox traditions and discriminatory legal system. Since women constitute50.13 per cent of the total population multi-dimensional development of Nepalese women contributes to the overall development of the country.' (p: 693)

Hence, this period focused on women's development through women's participation as a strategy to achieve development. The plan document says:

'Creation of a developed society on the basis of women's empowerment and gender equality through mainstreaming women's participation in each and every aspect of national development is the long-term concept of women's development.' (p: 693)

For this, the plan emphasized the need for appropriate gender disaggregated indicators to be

used in monitoring and evaluation.

By the Tenth Plan, terms like ‘gender equity’ and ‘women’s rights’ were present and there was a focus on gender mainstreaming, equality, and empowerment. It had a chapter on *Women, Children, and Social Welfare* under a broader theme referred to much more generally as ‘the social sector’. In addition to policies to increase women’s participation in programmes, the Tenth Plan put emphasis on women’s participation in capacity building, such as enrolment in higher education. The Tenth Plan also stands as a poverty reduction strategy paper for the country. It visualised women’s development as an indicator of development, and women’s participation in all sectors of development was seen as a way to alleviate poverty.

Again, one can see the influence of international debates and commitments in this emphasis on women’s empowerment, for example the Beijing Declaration 1995. The Ninth Plan stated:

‘Considering the Beijing Declaration 1995, a Gender Equity and Women's Empowerment National Work Plan 1997 has been formulated encompassing 12 sectors that need to be paid serious attention on women and poverty, education, health, violence, armed insurgency, economy, policy making, institutional structure, human rights, environment and children.’ (p: 695)

In the Ninth Plan, irrigation was included in the chapter on ‘development of infrastructure’, whereas drinking water was discussed within the chapter on social services and security. The irrigation sub-section mentioned a need to increase women’s participation in irrigation, but it considered women as having less capacity with respect to irrigation management. It stated:

‘Participation of user farmers will be gradually increased in the identification, construction, repair and maintenance of irrigation projects. While selecting and operating irrigation projects preference will be given to those where more public participation is possible and which is less expensive and more beneficial. Similarly, women's working efficiency in irrigation management will be enhanced by providing them training in irrigation projects. Their working efficiency will be used in geophysical and water management of watershed areas and project operation.’ (p:492)

Similarly the sub-section on drinking water and sanitation mentioned about women as follows:

‘Nongovernmental and social organizations will be encouraged to participate in programmes for drinking water and sanitation, and maximum women participation will be encouraged in various stages of projects right through their formulation.’ (p:667)

The same is observed in irrigation and drinking water chapters in the Tenth Plan. However, both sections did not make explicit linkages between women’s participation and sector development. The drinking water narratives made some logical connections, explaining that women’s involvement will lead to sustainable management because of their responsibilities in drinking water. Such logical justifications were lacking in the irrigation programmes, either in the plan or the policy documents.

The chapters on irrigation and drinking water in the Tenth Plan had a section on how the sector contributes to gender equality. Irrigation narratives showed women's participation as contributing to gender equality, meeting women's development goals. Though drinking water narratives linked women's participation to women's roles in water collection in Nepalese society, they also included a discussion on equal contributions from men and women for drinking water sector development.

Irrigation Sector: 'The Irrigation Policy, 2053 BS (i.e. 1997 A.D.), has made it mandatory that at least 20 per cent representatives in a farmer user group should be women. Women's direct participation, at least by 20 per cent, in the course of irrigation development and management will also help for gender equality.' (p: 320)

Drinking Water Sector: 'It is required to have equal contribution and participation of both the male and female for the balanced development of the country. Hence, the role of female will be increased gradually in the implementation of drinking water supply and sanitation programmes. The role of women will be made decisive by involving them in each stage of project operation, considering their major responsibility in the Nepalese society for water collection and carrying home, use and cleaning of houses, while implementing the project. The project will be sustainable as well as the women will get time to participate in other activities from such arrangements.' (p:498)

In the drinking water sector, women's participation was explicitly included in monitoring, as an indicator of progress.

Other policy documents formulated on the water sector in this period include the Water Resources Strategy 2002 and Plan 2005. These documents also did not make explicit how they perceived the linkages between women's participation and sector development. Rather they emphasized the need to consider the hydraulic boundary of a river for water resources development (compared to the earlier approach based on administrative boundaries). In irrigation, the plan promoted the installation of shallow tube wells as a means to increase water access to poor farmers, also with their associated low cost.

For drinking water, the plan promoted the expansion of any kind of drinking water infrastructure first, considering the quality of water delivery later. This plan further emphasized the importance of community participation in rural areas and stressed the need for projects to recover costs (HMG 2005a: 79). The irrigation policy of 1992, amended in 1998, still allowed for differential rates of users' contributions to government supported system development projects, recognizing regional differences in difficulties for people living in the hills, the Terai, and mountain regions to construct or rehabilitate their systems (see Annexe 1:25 of irrigation policy). It was later removed in policy amendment in 2003. However, within sector development approaches, these amendments around construction management never explicitly linked with the policy provision of 20 per cent women's participation in water system management.

To conclude, though the period visualised women's participation in both irrigation and drinking water sectors, the link between the two is rather indirect. The dominant discourse, that women have to contribute to development just like men, occurred more explicitly than including women into such programmes to address their needs, as well as sector development. Table 2.6 summarises features of the Ninth and Tenth Periodic Plans.

2.3.4 The period 2007-2010: Gender mainstreaming and inclusion

In this period, a three-year interim plan (2007-2010) was implemented by the then interim government of the Republic of Nepal. Compared to earlier plans, this plan perceived development with a stronger emphasis on equity and justice. In addition to a focus on women, it recognized that issues of disadvantaged regions and communities based on caste and class should be addressed in development plans. Participation, in this plan, is a tool for inclusive involvement. To achieve this, it envisioned strengthening local governance entities such as water users' associations and its federations.

In short then, the interim plan perceived development as a tool leading to a prosperous, modern, and just Nepal. 'Prosperous' referred to a self-sustaining society, also free of absolute poverty. 'Modern' referred to the overall conditions of the people (social, cultural, education, economic, and fiscal). Modernization was seen as improvements in the behaviour of people and the adoption of appropriate technologies and innovations. 'Just' referred to a condition without discrimination and inequalities.

The plan emphasized the inclusion of communities, which had been identified as having been excluded from various social and official events in the past. The identified groups were women, Dalits, Janajatis, Madhesis, Muslims, and the disabled. Emphasis was laid on uplifting the excluded through affirmative policies including increased participation by them in the administration and management of resources. This explicit attention to the excluded was an outcome of the decade-long people's movement led by the Maoist Party. The plan had a chapter on gender mainstreaming and social inclusion, and looked at development as an inclusive process.

I reviewed the four chapters of this plan that talked about equity and water sector development in more detail, to analyse how development and gender equity concerns were linked: (1) on social justice and inclusion, (2) on gender mainstreaming and inclusion, (3) on drinking water, and (4) on irrigation. Similar to earlier plans, the chapter on drinking water was included within the framework of social development, whereas the one on irrigation was included in the context of infrastructure development.

The chapter on social justice and inclusion saw justice as a major policy area, alongside macro-economic policy, and listed six focus areas for just development. These comprised human rights, inclusive development, regional development, poverty alleviation, employment, food security, and environmental management. It highlighted the consideration of excluded communities and regions. Gender mainstreaming and inclusion was mentioned as a focus for

sector plans, to set goals and programmes for women and others, with an emphasis on the inclusion of women and the institutionalization of gender-responsive budgets in all sectors.

The quantitative target for achieving women's representation in policy making bodies was set at 33%. To implement international commitments of the state, the plan aimed to eliminate all unacceptable forms of discrimination related to women. For the first time, a plan displayed some awareness of the fact that not all women are similar. The plan emphasized the need to focus on women's rights, and noted that poor women needed to be treated differently.

I further examined the chapters on drinking water and irrigation to understand how these discourses on inclusive development were reflected and connected with plans for water sector development. The objective of both sectors was sustainable resource management. More specifically, the objective of the drinking water sector development was visualised to:

'...ensure sustainable water supply services and a healthy environment by institutionalizing socially inclusive development initiatives; gradually providing purified drinking water to the whole population; providing treatment facility with an inclusive sewerage system in urban, semi-urban areas and emerging towns; and providing toilets using appropriate technology in rural areas.' (p:309)

Similarly, the objective of the irrigation sector development was specified this way:

'...to enhance agricultural production through year-round, dependable, and sustainable irrigation services, promoting opportunities of employment generation, social inclusion, and a geographically balanced development.' (p:392)

Actions for inclusiveness in the sector were planned through the proportional representation of drinking water users including women:

'...The proportional representation of women in the decision-making (leadership) level of the users' committees will be duly emphasized so as to ensure their powerful and effective role.' (p:311)

Also in the irrigation chapter, inclusiveness was supposed to be achieved with the appropriate representation of users:

'Appropriate representation of the women, persons with disability, senior citizens and the disadvantaged groups shall be ensured in the formation of the water users association.' (p:394)

What is appropriate representation was not very clear in the documents, leaving room for ambiguities to manipulate appropriateness.

As this plan addressed regional disparities, water programmes were to be prioritised for disadvantaged regions and communities accordingly. Also, unlike earlier emphases only on large irrigation projects, this plan mentioned the promotion of less conventional irrigation technologies, such as drip irrigation, to enhance access to irrigation on the lands of small and marginal farmers.

Table 2.6 Features of the Ninth and Tenth Periodic Plans (1997-2007)

Development Vision	Women	Caste	Class	Regional issue	Irrigation	Drinking water
Poverty alleviation; sustainable economic growth; women's development, engagement of civil society organisation & private sector in development;	Women's empowerment, equality, gender mainstreaming & gender equity concerns are raised, in addition to programmes targeting women; focus was on mainstreaming gender in all sectors	Issues of Dalits, lower caste groups addressed	Issues raised of down-trodden & people living below poverty line	Region based preferences set in programme implementation	In addition to system expansion, increasing users participation became programme strategy; women's participation is perceived as effort to achieve women's development, increased users participation is also to reduce cost	Women's participation in drinking water programmes is to achieve women's development targets. Women members in users committee is mentioned as indicator for gender mainstreaming

Table 2.7 Features of the Eleventh Plan i.e. First Three-Year Interim Plan (2007- 2010)

Development Vision	Women	Caste	Class	Regional issue	Irrigation	Drinking water
Prosperous, modern and just society; inclusive development	Categorized as one of the disadvantaged groups; participation in all sectors prioritized; commitment to amend any policy that contradicts or fails to meet international commitments on women	Dalit, Janajati, Madhesi treated specifically as disadvantaged groups to uplift their status	People under absolute poverty level to be assisted with special programs	Backward regions identified to select for sectoral programmes	Infrastructure development, inclusive sustainable system management, appropriate representation of women and other excluded groups in users' organization	Social sector development, priority is accorded to regional balance along with inclusion of socially economically disadvantaged groups, proportional representation of women in users' committee

In both sectors, the institutionalization of users' participation was also targeted through efforts to strengthen the capacity of users' associations, assuming that users can ensure equity around water through their active participation in such organizations. In summary, this period also emphasized an increased participation of users in general and women users' specifically. A noted effort made in this period was on resource allocation to address gender concerns in the development programme. Like in earlier plans, the thrust of the inclusive development discourse was not explicitly linked to the water sector development, with the use of vague words like 'appropriate participation', at least in the irrigation chapter.

Table 2.7 above presents key features of the Three-Year Interim Plan.

2.4 Conclusion

In this chapter I have analysed the efforts of successive Nepal governments to address issues of gender inequity, focusing specifically on the irrigation and drinking water sectors. I reviewed periodic plans as well as irrigation and drinking water sectoral policy documents published from 1956 to 2010, to answer: How has the government of Nepal discursively been constructing the linkages between its gender equity agenda and its water sector development efforts?

My analysis in section two showed how participation slowly evolved from being seen as largely a functional question (of different professional groups forming the base of the government) to a question of political democracy. Besides, ideas on women were found to have changed. From having been mainly targeted as mothers - who needed to be taught about nutrition, health, and hygiene -, gender is now clearly on the agenda as an important equity concern.

In section three, I showed that the gender equity agenda of Nepal government only very indirectly was being linked to water sector development discourses. The government visualised increased users' participation as a primary means to address inequity, with emphasis on increasing women's participation. However, how women's participation, and lately participation of other disadvantaged users, in water programmes could help redress inequities was not made explicit. At least in the drinking water sector, it had been linked to a role for women in water management and system sustainability. But it remained vague in the irrigation sector. The emphasis on women users' participation in users' committees was perceived as an effort to achieve women's development rather than water sector development.

Based on a participatory policy, the sector-specific water resources acts and regulations visualised water users' association (WUA) as a local entity to address issues around water allocation, distribution and conflict, with a monitoring role of the government. Issues of (gender) equity were thus implicitly delegated to local communities, who were expected to arrange questions of equitable allocation and voice among themselves.

The following Chapters 3-5 in Part I of the thesis analyse the outcomes of these policy efforts.

PART I

ACCESS, AGENCY, AND PARTICIPATION

Part I deals with access to water for farming and domestic use in the community. It explores the links between users' participation, society, and agency with respect to accessing water.

It seeks answer to third sub question discussed in Chapter 1.

How does formal participation in WUAs translate into women's voice in water decision-making and their access to water at community and household levels, compared to that of men?

This part of the thesis includes chapters 3, 4, and 5. Chapter 3 introduces the research area describing water systems and the social organization along the Baruwa River. Chapters 4 and 5 are analytical. They respectively present cases of water access, participation and agency in irrigation and drinking water systems located in the Baruwa River basin.

Chapter 3: The Baruwa River Basin

This chapter introduces the Baruwa River Basin, focusing on the zone of the river where the water systems under study were located. They included three irrigation systems and two drinking water systems. This area forms part of Udayapur district in eastern Nepal. As these water systems all extracted water from the same river, there was competition over water from the river between them in the dry period. The upper catchment of this river is hilly, and monsoon rains can cause rising water levels and flood events that can also affect these systems. There were social differences between upstream and downstream villagers. Understanding these geographical and social variations in the study areas is important as they provide the background against which issues of water access and management need to be understood.

3.1 The Baruwa River Basin

The Baruwa River is located in the Triyuga Municipality, a municipality that was formed in 1997 by merging three village development committees (VDCs): Bhumrasuwa, Gaighat, and Deudi in Udayapur district. A VDC is a village-level governance structure that used to be called Panchayat during the Panchayat period (1960-1990). It was named VDC during the multiparty constitutional monarchy in 1990. One VDC consists of nine wards on average. As such, a VDC is the lowest administrative unit for local development in the country.

The Triyuga Municipality is a C-grade municipality, one level higher than a VDC with respect to development indicators such as infrastructure, health, and educational facilities. Hence, though it is a municipality, it also has features of remoteness and lower levels of service provision more typical of rural Nepal. It is connected to the East-West Highway by a 30 kilometres link-road (Sagarmatha Highway) that links it with the adjoining district Siraha to the South. The road passes by the Triyuga before entering the centre of the municipality. At the time of the field study, a bridge across the Triyuga to reach Gaighat was under construction (see Figure 3.1 for bridge location). Without a bridge, mobility across the district was determined by water levels in the river, which would often be too high to allow crossing in the rainy season.

The municipality is spread over 37 square kilometres and divided into 17 wards. The Baruwa acts as a boundary between the wards on the left and the right bank. The irrigation and

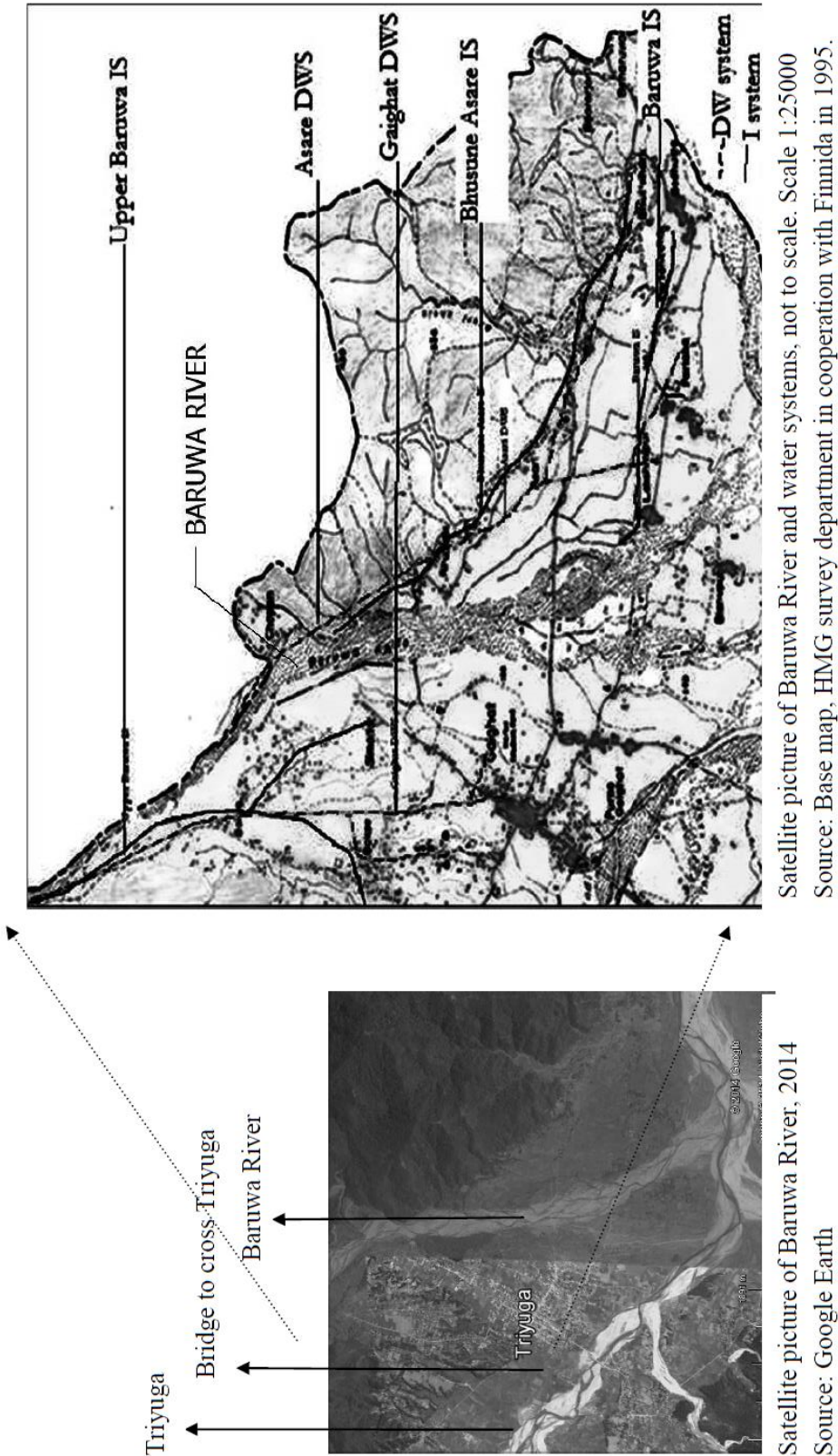


Figure 3.1 Topographical and satellite map of the Baruwa River and water systems along the river

drinking water systems on the right bank¹, of which the Baruwa was the source, were located in Wards one, sixteen, and seventeen of the municipality. On the left bank, they were located in Wards three, four, and five.

The Baruwa is the second largest river in the Triyuga Municipality. It drains into the Triyuga River, which is part of the Sunkoshi river basin². It is located in the *Siwalik*³ hill zone.

A common feature of the rivers draining into the Siwaliks (including the Baruwa River) are flash floods in the rainy season. These floods carry heavy sediment loads, and can be life-threatening while also washing away lands and buildings. The floods also often damage the diversion structures of water systems that extract water from the Baruwa River, destroying the intakes and eroding the river bed. This has often forced farmers to construct new intakes, further upstream.

Downstream, the sediments are deposited in river beds and floodplains, making the river shift shapes and altering its course throughout the years. For instance in the 1970s, the river bifurcated along a settlement area approximately 2.35 kilometres upstream from where the Baruwa River joins the Triyuga River. This forced farmers to move to the left bank.

The water levels in the river fluctuate with rainfall. Though on an average the annual rainfall in the district is 2.152 millimetres, eighty per cent of this rain falls in the monsoon, generating the highest river discharges in June and July. Since there is no rainfall⁴ in the period December-January, river discharge is at its lowest then.

¹The right side of the river facing in the direction of the flow is described as the right bank.

²Sunkoshi is one of the seven largest rivers in Nepal.

³Nepal has seven physiographic divisions: the Terai, Siwalik Hills, Mahabharat, Midlands, Himalayas, Inner Himalayas, and Tibetan margin mountains - from South to North with a trend of increased altitude. The Siwalik hill zone rises abruptly from the Terai plains and reaches an elevation of between 700-1500 metres. This zone is composed of sedimentary rocks and big boulders; flash floods are a common problem (Hagen 1998).

⁴ The rainfall pattern in Nepal is characterized by pre-monsoon, summer monsoon, post-monsoon, and winter seasons. The pre-monsoon (March-May) is hot and dry with scattered rainfall. The summer monsoon (June-September) is governed by a south-easterly, moisture-laden air mass moving from the Bay of Bengal. The monsoon reaches eastern Nepal with a modal onset date of 10 June and advances westwards covering the whole country within a week. The post-monsoon season (October- November) has a modal onset date of 21 September. Rainfall activity substantially reduces after September, with November typically being the driest month. The winter season (December-February) is generally dry, although westerly weather systems may bring cold air and winter precipitation to north-western areas (Shrestha et al. 2000).

3.2 Water Systems located along the Baruwa River

At the time of the study, two drinking water and four irrigation systems used water from the Baruwa River. Figure 3.1 showed the topography, river network, and location of these systems while Figure 3.2 gives a schematic layout of the location of the systems along the river.

The systems on the right bank are: the Gaighat Drinking Water System (GDWS)⁵ and the Upper Baruwa Irrigation System (UBIS). The left bank has one drinking water system, the Asari Drinking Water System (ADWS), and three irrigation systems, the Bhusune-Asari Irrigation System (BAIS), the Baruwa Irrigation System (BIS), and the Asari Irrigation System (AIS). The AIS is located between the BAIS and the BIS, and is the oldest farmer managed system among the three systems. With the exception of the AIS, all other irrigation systems have received support from the Department of Irrigation, either to construct or to rehabilitate the system. Since the focus of this study is on government interventions and the impacts of policies, I studied all the government-assisted systems located in Baruwa. Hence I did not include the AIS in my analysis.

All the water systems were managed by Water Users' Associations (WUAs) according to the Water Resources Act and respective irrigation and drinking water policy directives (see chapter 2).

Typically, the physical layout of a drinking water system consisted of a diversion structure with an earthen filtration chamber, a reservoir allowing for water treatment, and distribution lines. The irrigation systems typically included a diversion structure and cemented main canal of a certain length below which earthen canals were present.

As an older canal system without government intervention, the AIS had some distinctive features compared to the other irrigation systems. It was located on flatter lands in the most downstream location, and had a diversion structure with a gentle side slope that had been partially cemented with funds from the local government. It had the largest and deepest main canal dimensions among the systems (about a meter square) and otherwise had earthen control structures. Local leaders claimed their forefathers had dug the deep and wide canal so they could use it both to divert large amounts of water into the canal and to drain excess rainfall. The other irrigation systems had main canals that were cemented during construction or rehabilitation with support from the Irrigation Office in the district.

⁵This system is now upgraded as the 'Triyuga Small Town Drinking Water Supply Project'. In this thesis, I use the name Gaighat Drinking Water Supply System current at the time of study.

Tables 3.1 and 3.2 respectively present the most salient features of the studied irrigation and drinking water systems.

Of the two drinking water systems, GDWS is the largest and most upstream system, and the first to extract water from the Baruwa River. Both drinking water supply systems are supposed to be financially independent as far as their operation and maintenance is concerned, which is why they collect water fees. In GDWS, some of the taps were metered. The ADWS is one of the rural drinking water projects implemented by District Office of the Department of Water Supply and Sewerage (DWSS). Here, no taps were metered so far. Users paid a flat rate per tap, irrespective of the amount of water used.

Table 3.1. Salient features of the selected irrigation systems

	System on right bank	System on left bank	
	UBIS	BAIS*	BIS
User Households	178 (2004)	279 (2004)	171 (1991)**
Command area ha	264 ⁶	144	150
Executive members of WUA in respective years	9 male, 2 female-2000	11 male-1997 12 male, 5 female-2004	11 male-1991 10 male, 1 female-2003
Rehabilitation year	2000-2001	1995-1996	1991-1993 2003
Resource Management	Fee collection	Fee collection since 2002	No fee collection (labour contribution)

Note : *siphon system; ** Based on WUA record 1991 at the time of rehabilitation. WUA did not maintain a new record, though claimed to cover more than 215 user households

Table 3.2. Salient features of the drinking water systems

	GDWS on right bank	ADWS on left bank
User Households	600*	116 (2005)**
Taps	437	75
Community tap	45	11
Inception date	1993	1994
Executive members of WUA	9 male, 2 female (2005)	9 male, 2 female (1996) 9 male, 2 female (2000)

Note: *Estimate based on tap numbers. WUA maintained record of taps of households served, **399 in year of construction in 1997, the number in parentheses is data for the year.

⁶ This was the planned command area in 2000 under a rehabilitation project; water did not reach its tail end. Field verification showed the command area was larger than 64 hectares as recorded with the WUA. For details see chapter 4.

3.3 People living in the area: castes, occupations, and mobility

Social and power differences between people living in the area importantly shaped what happened around water, and in water users' associations. In particular, the area was marked by differences based on caste and ethnicity, which were often linked to wealth, land ownership, and occupation. Another pertinent feature of the area was that people were very mobile, either moving into or out of their villages in search of better lives elsewhere. I use this section to tell a bit more about these issues, which provide the social and cultural background and context of water questions.

The right bank of the river was more developed compared to the left bank. The settlement of Gaighat on the right bank was a trade centre, serving as a transfer station between the northern hills and the cities of the southern Terai through its connection to the east-west highway. Also the fact that the district government offices were located in Gaighat made the centre visibly more prosperous than the villages on the left bank. At the time of the field study in 2005, there was no bridge connecting the left bank to the right bank of the river. This made it difficult for people living on the left bank to access shops and offices on the other side, especially in the rainy season.

The people living in the studied villages can be clustered into different ethnic and caste groups. The first is the high-caste group called *Chhetri*, who mainly live on the right bank of the river. Its members mostly go by the name of *Basnet* and are therefore referred to as *Basnet-Chhetri*. (Earlier, they were known as *Basnet-Kajis*). They were the administrators for the then King after Nepal's unification in 1769. They owned relatively large pieces of land, and some of them were involved in national politics.

The second group are the hill migrants belonging to the *Brahmin-Chhetri* and other high-caste groups. In addition to income from farming, members of these groups gained considerable off-farm incomes, by working as government employees, among others. They were influential on the left bank.

The *Basnet* and *Brahmin Chhetri* were educated migrants who had migrated to the plains from the northern hills of Nepal, especially after the eradication of malaria in the 1960s.

The third group are the local ethnic communities of *Chaudhari-Tharu* and *Danuwar*, whose livelihoods were primarily based on farming.

The fourth category is that of the 'untouchables', which includes the following low-caste groups: *Mushar*, *Damai* (tailors), *Sarki* (cobblers), and *Kami* (blacksmiths). Members of these groups owned little or no land, and most of them were tenants living on daily wages.

In addition, there were representatives of other caste groups such as the *Rai* and *Tamang* of tribes belonging to the Tibeto-Burman community. Their families often had one or more members working in the British, Indian, or Nepalese armies and used their earnings to buy land in the area. There are also the *Newar* who are *Kirat* migrants – many of whom were

traders. The *Mushar* were socio-economically poor agricultural labourers, many of them without land of their own.

On the right bank, Ward 1 lies upstream of the other wards. The migrant *Basnet-Chhetri*, who migrated from the northern district of Khotang (see Adhikari & Hobley 2011:31 for more details), mainly lived in Wards 1 and 17. Ward 17 is downstream, followed by Ward 16 which is in the plain. The *Danuwar* were the dominant group in Ward 16.

On the left bank, the most upstream village is Bhusune in Ward 4. The villages downhill are in Wards 5 and 3 that slope gently down and join the plain in hamlets called Danuwari, Behedwa, Bhatikharka, DhikTola, Portaha, and Laxmipur. These areas were dominated by the *Danuwar* and *Chaudhari-Tharu* (see Table 3.3)

Table 3.3 Dominant castes in wards covered by the irrigation & drinking water systems

Right Bank	Left Bank
Ward 1- Brahmin Chhetri	Ward 4 - Brahmin Chhetri
Ward 17- Brahmin Chhetri	Ward 3 - Danuwar, Chaudhari
Ward 16 – Danuwar	Ward 5 - Danuwar, Chaudhari

Note: Wards are presented in altitudinal order. The first is most uphill, the last most downhill.

3.4 Human mobility

As mentioned, the area is characterized by high mobility of people, migrating in and out. In particular, many temporarily migrate to cities across the border with India in search of off-farm income. Mainly male farmers belonging to the *Chaudhari* and *Danuwar* communities are involved in short-term migration, during which they leave farm responsibilities to their wives, mothers, and daughters. In the last ten years, some people even migrated for longer periods of two to four years to work in countries like Kuwait and Malaysia. In interviews, people explained that this long-term migration of men had increased in the recent past due to the Maoist insurgency in the area.

Many villagers on the left bank migrated to work in the coal mines of Koilakhad in the state of Meghalaya in India. These were of two types: seasonal migrants who worked as labourers to extract coal, and those who worked as contractors by renting mines. Only those people who had money to invest and had the capacity to deal with all official procedures got involved in renting a coal mine as contractors. They often mobilized fellow villagers to work in their mines. Working in such mines as a labourer was sometimes risky. One of the woman respondents was a widow whose husband had died while working in a mine.

A survey conducted among 195 households on the left bank showed that 28 households, i.e. 15% of the households of the villages were female headed, which is more than the national average of 10.39% in 1999 (CBS 1999). Of these, 16 were de-facto female headed, with either

their husbands having migrated to foreign countries or being employed in jobs with much out-posting like the Nepal army or police. The remaining 12 were widows.

Of this total survey, 39 households (20%) had one or more young members who had migrated. These youngsters, who had gone abroad for 3 to 4 years, would come home once a year for a maximum of two weeks. Of the 53 young men who had migrated, 19 had left their wives with their parents in the village.

In all, this out-migration of (young) men has been leading to a distinct feminization of agriculture, with women becoming the de-facto heads of households and assuming domestic as well as outside irrigation and agricultural responsibilities.

At the same time, in-migration in the study area from northern hills affected by conflict was also prominent at the time of the field study. The urbanization that had resulted from these internal displacements in the district under study as well as neighbouring districts had sharply increased the land price in 5 to 8 years, sometimes as much as 33-50% of the preceding year's price in just one year. Paddy fields were also sold for housing.

On the other hand, since lands prone to floods next to the river were cheaper, some migrants had opted for those. Newly constructed, small canals were seen in the land area between the two arms of the bifurcated river. Some were using groundwater pumps for irrigation.

These patterns of in- and out-migration in the study area had an influence on the power dynamics surrounding the access to and control over irrigation and drinking water, which I discuss further in chapters 4 and 5.

3.5 Social relations and the struggle for land rights

Class difference was another prominent feature of the study area. One clear manifestation of this, still vivid in the memories of many met while doing the research, was the violent land struggle between landlords and peasants that had erupted on the right bank after the enactment of the Land Reform Act in 1964. That violence continued to colour relations between landlords and peasants, also affecting the way users communicated about water issues.

Before 1951, the Basnet family were the village administrators and formed the elite. In the 1990s, peasants fought with members of the family for land rights.

In an interview with a peasant leader in Nayabasti, he recalled:

'The Land Reform Act of 1964 defined both the land ceiling and tenancy in the country. The land that did not belong to anyone was declared property of the state. The government implemented the Land Improvement Act in 1971, which marked the start of a systematic registration of land. The distribution of land ownership cards also began in 1971.'

In 1988, government officials allocated land to the landless in this place now called Nayabasti, located in Ward 1. We all were landless and used to be agricultural labourers, working for a landlord. The landlords, Basnet claimed the land was theirs and chased us away saying that the land belongs to them. In 1990, we gathered together and went to ask the authorities to demarcate our lands in the field. Though we had then identified and demarcated the area, the elite did not allow us to settle. The conflict ended violently, with the police having to fire rubber bullets to stop the fights between the parties. But the problem continued to simmer: a curfew was even declared, in 1994. Finally, the issue was resolved, when the landlords failed to present land-ownership papers to the chief district officer. We, the landless got possession of our lands in Nayabasti.”

The man showed the scars on his leg that reminded of the violent action that had taken place during the struggle.

This incident marked the end of the feudal structure of land management in the study area.

Yet, tensions between the two groups continued, and also influenced what happened within water user associations and around water issues themselves. At the time of the field study, the ongoing Maoist movement clearly took a stance against the landlords. Their efforts to end the feudal powers of the landowners included restrictions on the buying and selling of their lands, among others.

3.6 Conclusion

This chapter has described the character of the Baruwa River basin, the major water systems located along the river, and the social organization of villages. The caste-class variation in the study area is a feature of the study area that importantly shapes the complexities of accessing water.

This river basin represents the areas of the inner Terai of Nepal lying at the foot of the Siwalik Hills, with a river characterized by flash floods and shifts in river patterns, and with low and variable flows across drier months. Water systems located in the upstream area had characteristics of hill water systems, whereas those downstream had characteristics of water systems of the plains. This gave an opportunity to analyse and compare issues around diverse water systems, in a mini-Nepal as it were.

Chapter 4: Accessing Irrigation Water

'I came to attend this (WUA) meeting because my husband went to work for the family. When he works (wage labour), he earns more than I do. As a man he is paid more than I am.'

- Female participant of BAIS WUA

'I did not attend the WUA meeting, since I know the meeting is to inform us on the date of canal cleaning. I know the date. Hence I use the time for my farm.'

- Male irrigator, BIS WUA

This chapter is about access to irrigation water at community and household levels. It aims at answering the following question: What is the link between participation in a water users' association (WUA) and access to and control over irrigation resources?

To answer this question, I have tried to understand how access to irrigation water was arranged by users. In the analysis, I focus in particular on the gender dimensions of users' struggles to be able to irrigate land. I also look at gender dimensions of participation in irrigation activities as well as WUA leadership and functioning.

I made three case studies of irrigation systems in the Baruwa River basin already outlined: the Upper Baruwa Irrigation System (UBIS) on the right bank, and the Baruwa Irrigation System (BIS) and Bhusune Asare Irrigation System (BAIS) on the left bank (See Figure 3.1 and 3.2 in Chapter 3 for detail).

These systems were either constructed or rehabilitated under the Irrigation Sector Project (ISP) and the Second Irrigation Sector Project (SISP) of the Department of Irrigation (DOI), implemented under a loan agreement with the Asian Development Bank. The UBIS and the BIS had been initiated by farmers and were later rehabilitated with DOI support. The BAIS had been initiated by the government on users' request.

In all three systems, DOI had been in charge of construction and rehabilitation, processes in which they had involved users, following guidelines of the participatory irrigation policy enacted since 1992. These systems were handed over to water users' associations (WUA) on completion.

4.1 The Upper Baruwa Irrigation System

The Upper Baruwa Irrigation System (UBIS) had initially been constructed and owned by one family. Later, other community members were included, so it became a community system. It received a grant under the SISP to expand its command area in 1998. The system was handed over to the WUA after rehabilitation in 2000.

Though the rehabilitation works had been planned to allow irrigation of 264 hectares of command area (belonging to Wards 1, 16, and 17), the water did not reach land under Ward 16 at the tail end. This created mistrust between the irrigators of this Ward and the WUA leadership. The resulting dynamics have coloured the nature of users' participation in the management of the UBIS, as will become evident further in the analysis.

4.1.1 A brief history of the UBIS

The UBIS was initially constructed by the *Basnet Chhetri* family group in 1923 to irrigate their lands. The *Basnet* families were seasonal migrants until 1969, after which they settled in Wards 1 and 17 of Triyuga Municipality.

Mr Basnet, a member of the family who is in his seventies, narrated:

'During summer, we used to live in Diktel, the district headquarter of Khotang district located uphill to the north of Udayapur district. In winter, we used to come down to Udayapur to cultivate. Malaria was a problem in Udayapur which is why we used to go back to the hills in Diktel. Our family invested in the construction of the kulo or paini (earthen canals) way back in 1923. We brought Khadel (skilled persons) from Diktel to cut stones to construct the canal. We did not hire the local Chaudhari, Danuwar and Mushar from Udayapur as they do not have that skill. After malaria eradication in the middle of the sixties, we sold our property in the hills to settle down in Udayapur.'

Traditionally, these *Basnet* families were state administrators under the King, and they owned land through the *Birta* and *Jagir* system¹. With the abolition of this system and the implementation of the Land Reform Act of 1964, the relationship between peasants and landholders changed.

The *Basnet* group welcomed other villagers to use the system they used to consider their family property. It increased their popularity and provided political benefits. They declared the system a community system so that government grants could be received to expand it. Leadership of the system continued to remain with them. Those leaders, who had better

¹ Before 1950, the state gave land grants to individuals in different forms such as *Birta* and *Jagir*. Under *Birta*, the state rewarded individuals with lands exempt from tax. Under *Jagir*, it granted land to individuals serving in the government in lieu of their emoluments. Taxes were paid and the state had the right to forfeit the grant (Adhikari 2008: 23, 24).

knowledge about facilities provided by the government, applied for state support to extend the command area. The request was approved in 1998 and the system was expanded.

4.1.2 System infrastructure

The UBIS is a gravity irrigation system that receives water from the Baruwa River through a side intake. The design discharge at the intake was 486 litres per second. The intake had a de-silting basin, because the Baruwa River carries a heavy silt load. The canal consisted of 2 level crossings, 8 super-passages, 3 aqueducts, 10 division boxes, 7 village road culverts, 15 foot bridges, 15 outlets, and 2 escapes. There was one energy dissipater chamber along with 5 manholes, 4 drop structures, and a 145 metres long retaining wall. Of the total canal length, 1425 metres had RCC lining with 300 metres having cover slabs.

The system was designed to irrigate 264 hectares of land, but this was not achieved at the time of the field study in 2005.

The 1.3 kilometres portion of the main canal (in Ward 1) from the headworks received rainwater runoff from uphill. For this reason, it was lined with RCC to avoid erosion of the bed and sides, but due to heavy rainfall and upstream runoff the lining caused the canal to overflow, flooding some fields located at the side of the canal.

To prevent this overflow again, the affected farmers constructed a canal next to the main one, hoping both canals could carry off the volume of rain fall. But the problem was not solved, and the volume of water received during the rains was beyond the capacity of the main canal and often damaged the structure. So, regular maintenance of the earthen canals was essential.

Regarding the failure of the canal to irrigate land at the tail end, farmers informed me that the dimensions of the main canal, which were 60 x 60 square centimetres, were too small to carry the amounts of water required to irrigate the entire command area. According to them, the engineering calculations had been made on the basis of criteria that would apply to a Southern Terai district (e.g., Sunsari, Morang) but would not hold for the inner Terai (Udayapur).

One farmer stated:

'The soil in Gaighat is porous and infiltration rates are quite high. So, our soil requires 7 days of irrigation, whereas the same crops in Sunsari in the South require only 3 days of irrigation.'

I discussed these complaints of farmers with engineers at the DOI office in Udayapur. According to them, the canal dimensions had been calculated and designed on the basis of the crop water requirements and soil types of the area.

While observing water use practices (from September 2004 to April 2005), I noted the irrigation water was also used for other purposes, such as construction and aquaculture. Some *Basnet* families (from Ward 1) owned fishponds that required canal water all the time. In addition, some new houses were being constructed along the road and the builders used the canal water for construction.

During rehabilitation, part of the canal lining had been carried out by a contractor. But farmers were reluctant to reform or dig new earthen canals, as there was no sign that water could flow to tail end plots. As a result, the lining work proposed for existing and new canals during the rehabilitation was abandoned, and irrigation water did not reach these tail-end areas.

When DOI engineers designed the canal structure, it was based on crop water requirements, and water use for fish farms or construction had not been envisaged. My field findings suggest that major reasons for water scarcity in tail-end villages in Ward 16 were unequal distribution of water and use of water by upstream farmers for other purposes than irrigating crops.

4.1.3 Social organization

The social organization of the UBIS showed class, caste, and gender-based hierarchies. Of the total 178 registered user households of the UBIS, only 10 were women (i.e. 5.6%), 83% users were *Brahmin Chhetri*, with others belonging to indigenous groups like *Chaudhari*. Some were *Sarki*, who were treated as untouchables, others were migrants from hill communities.

Landholding pattern and tenancy

Land-ownership was skewed in the UBIS. The largest landholding, by a *Brahmin Chhetri* family, was 140 *Katha*² i.e. 4.7 ha, while some villagers had no land at all (from the *Sarki* caste group). A field survey conducted among 151 user households of UBIS showed that 33 households (22%) owned 20 or more than 20 *Katha*, all from the *Chhetri* group of the *Basnet* family and their relatives. Another 70 households (46%) owned between 20 *Katha* and 5 *Katha*, while the remaining 32% did not even own 5 *Katha* of land.

According to field data analysis, 5 *Katha*, i.e. 0.17 ha of land were sufficient to grow paddy for the annual consumption of a family of 4. The average family size in the command area was 5.5 (Municipality Profile 2003). Hence, the group of farmers who owned less than 5 *Katha* of irrigated land was not able to produce enough food for their families. For that reason, many (26%) would lease in additional land. Another 28% had rented out their lands (Figure 4.1)

This landholding pattern reflected economic inequalities among the farmers using the UBIS. These inequalities also showed up on the agenda of the Maoist movement, active in those days. In Udayapur district, members of the movement had declared a ban on the sale of *Basnet* family land, pronouncing them *Sarbahara* (aristocrats or nobles). As a result, the *Basnet* families could not sell their lands.

² One *Katha* is equivalent to 0.0339 ha and 0.0837 acre

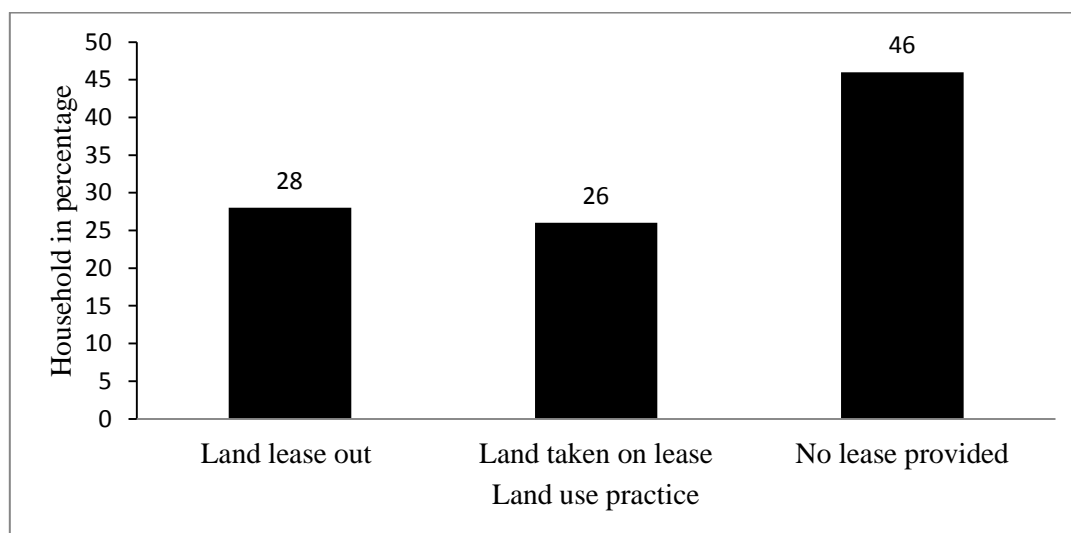


Figure 4.1 Percentage of user households under lease contracts in the UBIS

Source: Field survey, 2004/2005; n= 151

Users’ membership and tenancy

The WUA constitution defined general members as those who owned or leased in irrigated land, or those who were cultivating land under some other agreement. Such an ‘other agreement’ would refer to, for instance, a tenancy agreement where the tenant declared that he or she would not claim a tenancy right.

There were 178 WUA members at the time of the field study, mostly *Brahmin Chhetri* men; female membership was only 5.6% (10 women). Tenant farmers formed about 26%.

Gender		Caste composition		Irrigated land-ownership	
Men	Women	Caste	%	Land in <i>Katha</i>	%
168	10	Brahmin Chhetri	83	No land	3
		Others	17	< 5	30
				5 to 14	39
				15 to 29	14
				30 to 49	8
				50 to 140	6

Figure 4.2 Summary of users’ profile of UBIS, 2005

Source: Field study 2004/2005; n= 151

The case of the UBIS shows how the interests of landholders had predominated while crafting WUA by-laws, because of their control of the process. These by-laws mentioned that tenants were responsible for the payment of water fees. The tenants (and not the landowners) were

also the ones who had to participate in canal cleaning and fulfil other WUA obligations to retain WUA membership for the land cultivated by them.

In discussions with tenants and landholders, it was explained that this arrangement was to ensure tenants contribute to system repair and maintenance and pay water fees, even though they did not have any right to claim land-ownership from the landholder. In former days, the tenants used to engage in share crop arrangements called *Adhiya*, in which half of the crop would be handed over to the land owner. This practice changed over time, with landowners increasingly demanding to be paid in cash rather than in kind (crops). At the time of the study, some farmers were thus found paying cash to absentee landlords.

The relations between landlords and peasants in the command area have been one of tensions and conflicts. Between 1990 to 1994, tenants had fought with the landlords to claim their land rights according to the Land Act 1964 and the Land Improvement Act, 1971 (see chapter 3 section 3.5 for detail). Because of this, the elite dominating the WUA was keen to safeguard their interests through a by-law document (required under irrigation legislation anyway).

In other irrigation systems such as the BIS and BAIS, the by-laws did not clearly mention the roles and duties of tenants and landholders, allowing parties to negotiate. A tenant could also be a WUA member. Often in practice, it was found that the landholder and tenant would come to an understanding on who would represent membership in the WUA.

4.1.4 The Water Users' Association

An important role of the WUA of the UBIS was to mobilize external and internal resources for system management, and to arrange water distribution. The WUA had specified rules for water distribution for paddy in the rainy season. It hired a peon for three months, whose responsibility was to carry out minimum repairs, manage water distribution in the three distribution units, and collect water fees. After the rehabilitation in 2000, the WUA organized a general assembly meeting every year. On average, about 100 out of the total 178 members attended.

In 2005, the president of the WUA was a member of rather senior age, and his presidency was more an honorary position with minimal influence on WUA decisions. These were taken by other WUA members. One WUA member observed:

'We respected his seniority and selected him as a president.'

The president belonged to the family who used to own the system, and he was once a member of parliament too. In practice, the secretary of the WUA was the contact person for the association. He would sit at the office of the Gaighat drinking water system, because he was also the secretary of the drinking water users' association. The UBIS WUA did not have its own office.

Regular members of the WUA knew relatively little about its rules and functioning. A survey conducted with 85% of the users revealed that 26% of them did not know who the committee

members were. Another 28% remained quiet when asked about who was on the committee, a silence that indicated their embarrassment at not knowing the answer to the question. The remaining 46% of respondents nodded in affirmation when asked if they knew the association committee members.

Some respondents were surprised to learn the WUA committee had continued to exist after the rehabilitation activities. In fact, the WUA had been formed as per the Water Resources Act, 1992. It was mandatory to be thus registered to be entitled to government assistance. The WUA - known as *Samiti* among users in day to day conversations - was a farmers' organisation set up to work with the government during system rehabilitation or construction work. The system was handed over to the WUA after completion; the WUA was to assume responsibilities for water distribution and system maintenance. However, many users of the UBIS thought that the main function of the committee was to help co-ordinate the rehabilitation work with the district officers. Some of them thought that the committee would dissolve after the rehabilitation activities were completed. It shows that many users were not aware about formal rules and policies.

These survey results indicate that only about half of the WUA members knew of its existence, which raises doubts about its role and effectiveness as a management organization.

Formation of the WUA

Creation of the formal WUA in the UBIS took place at the time of the system rehabilitation in 1998-2000. As land-ownership was skewed towards the *Basnet* families and their relatives, WUA leadership was almost automatically also assumed by them, predominantly.

But the *Basnet* families were internally divided in terms of political affiliation, a division that started with the introduction of the multi-party system in the country in 1990. There was rivalry between two *Basnet* brothers for the WUA leadership, with one belonging to the Congress party and the other affiliated with the old Panchayat. Both had organized a mass meeting to lobby for the WUA leadership, but a final decision about who was to become the leader only happened because of the intervention of the chief district officer. The decision was to make Mr A. Basnet the president (who was not only senior age-wise³ but also had served as a Panchayat leader before and was a former parliamentarian too). His rival, Mr B. Basnet, (belonging to the Congress party) was appointed as the secretary of the WUA. Other members were elected by consensus.

This example illustrates that the formation of the WUA committee did not take place on the basis of elections, but happened through existing structures of power, authority, and hierarchy. The involvement of the district administrator did make a difference, but did not help in preventing elite domination in the WUA.

³ Age is one of the determinants of social hierarchy in Nepali society. Youngsters are expected to show respect to their elders, which is considered good manners. They should not be direct and opinionated with regard to elders (cf. Shrestha 2002: 290).

The first WUA committee consisted of eleven members, nine men and two women. Of the men, only one came from the *Chaudhari* community, the others belonged to the *Brahmin Chhetri* caste. The two women were selected because of the clause in the national irrigation policy. One of them was from Ward 1 and belonged to *Tibeto-Burman* caste group. The other female member was a *Danuwar* from Ward 16. In 2002, she was replaced by a migrant woman of the *Brahmin Chhetri* caste from Ward 17. The reason for this replacement was that the system had failed to irrigate Ward 16 (see above), and so the WUA had decided to eliminate it from its command area. In all, the WUA leadership was clearly dominated by men of higher caste and class groups. It was only because of the quota policy that there were two women committee members.

Fee collection and command area

The system rehabilitation was completed in 2000. Since 2004, the WUA had been collecting water fees at the rate of NRs 25 i.e. 0.33 US\$⁴ per *Katha* from ten hamlets (Table 4.1).

Table 4.1 Irrigated land and fee collection in the UBIS

Tola/village hamlets	Users	Irrigated land in <i>Katha</i>	Fee in NRs
Babari Siran	14	73	1095
Babari	14	105	1575
Mathlo Bokse	15	177.5	2662.5
Bokse Ratmate	17	580	8700
Bicha Ratmate (ollo)	36	251	3765
Bicha Ratmate (pallo)	22	155	2325
Khoriya tole	6	14	210
Sarki Khahare	7	22	330
Simaltar	39	450	6750
Tudibari	8	59	885
	178	1886.5 (= 64 ha)	28297.5

Source: WUA records 2005

During the field study, some irrigators remarked that there were people systematically under-reporting the size of their irrigated plots to get a reduction of the fees they had to pay. This under-reporting also transpired in the results of the survey (conducted among 85% of the users). It showed a total irrigated area of 68 hectares, whereas the WUA records reported a total of only 64 hectares.

A woman committee member justified her under-reporting as follows:

⁴ One US dollar is equivalent to Nepali Rupees 76 at the time of field study in 2004/2005.

'I hide the size of my land because the Basnet president and secretary do the same. If a rich person mentions less irrigated land in WUA records to pay less, why should a relatively poor woman like me speak the truth?'

Many other users expressed similar opinions.

Repair and maintenance

Repair and maintenance of the infrastructure was one of the key responsibilities of the WUA. It formed, in fact, its main (formal) *raison d'être*, next to the distribution of water. The UBIS committee would hire a peon from June to August, who was in charge of water distribution at three distribution units. The WUA paid him NRs 3000 i.e. US\$ 39 per month. He was also in charge of collecting water fees from the users in the same period.

Beside this, he was expected to do the canal cleaning. As for maintenance and repairs, he could not do these by himself, so he mobilized voluntary labourers among the users of the respective branch canals. The peon reported to the WUA secretary.

According to the secretary, the WUA decided to have a peon during these three months, since it was the peak irrigation period. He himself did not have the time to do the job, the WUA president had neither. Other committee members were not available, likewise. Hiring someone was the only option, which at the same time would create some employment for a landless person. In fact, the water fees were mainly meant to pay for the salary of the peon. In the winter season, no person was hired and the system was not operated nor maintained then.

For the repair of any other major damage to the canal, the WUA strategy was to mobilize resources from outside. This mobilization of external funds seemed to be the main responsibility of the WUA committee members, in fact. Many were also active on other committees in the district (such as the Red Cross, Forest Management, and School Management). So, they had an established network of contacts with other line agencies. This was useful for their ability to mobilize funds. For example, the committee succeeded in getting money to build sand bunds (embankments to avoid soil erosion) in Ward 1 to protect the system infrastructure.

Indeed, the status of and appreciation for WUA leaders among community members seemed to be related more to their ability to act as a spokesperson to 'the outside world' (and, in that way, mobilize funds for the community) than to their ability to manage the irrigation system.

Another example illustrative of WUA functioning is related to its assigned role of supervising the work to be done by the contractor at the time of rehabilitation in 2000. Though the approved budget for the rehabilitation work at DOI was NRs 11.3 million (US\$ 194827@1US\$equivalent to 58 in 2000), the work was completed with only NRs 6.9 million, since the contractor who carried out the construction work had made a bid with this (lowest) amount. The quality of the work done was difficult to judge, but in any case it did not result in water irrigating the entire command area: water did not reach Ward 16.

The record at the Irrigation Office at Udayapur showed that the voluntary contribution of WUA members had been equivalent to NRs 1.5 million. The grant from the Irrigation Office paid to the WUA for the work they were assigned to was NRs 1.9 million. The office paid NRs 3.1 million to the contractor. According to the participatory policy of the government, the WUA had to contribute 15% of the total cost of rehabilitation, of which 0.5% were to be paid in cash and the remaining 14.5% in kind (labour).

Though the entire budget allocated for the project had not been spent, many users believed there had been mismanagement of funds, when they saw the ultimate result - that Ward 16 remained dry, even after the rehabilitation.

According to an account officer of the irrigation office:

'The contractor quoted an unrealistically low budget to get the work. He did get the work, but could not complete the volume of the work that was required to make the system function.'

The WUA secretary stated:

'We have tried our best to make the repair work successful. In April 2000, the WUA decided to collect NRs 5/Katha. But we realized that the funds raised will be insufficient, i.e. NRs 40,000 in total against the required Rs 200,000, even if everyone contribute. That is why the committee collected cash from its members at the rate of Rs 25/ Katha of irrigated land, later in March 2001. To continue the work in 2000, committee members raised funds among themselves to meet the requirements of the Irrigation Office. Members also contributed their labour. Neither the contractor could do the work nor did we receive support from the Irrigation Office. Rather, the office sent the remaining unspent money back to the treasury, instead of agreeing to release the money to us to improve the system further.'

According to the former woman committee member of Ward 16:

'The WUA committee could not manage the funds. We deposited NRs 25 per Katha and contributed labour as decided at the WUA meeting. But we were cheated and we never received water.'

These discussions with different stakeholders suggest that the WUA committee made decisions without consulting all users, and was only very partially accountable to the users for its actions.

One of the users summarized this when commenting on the attitude of the WUA leaders:

'I don't like the Mr. X WUA committee member, when he sits under an umbrella and commands us to clean the canal. I am as much a user as he is. But he behaves as a Malik (landholder in the feudal system), with us as his Nokar (servants). He has never touched soil. The old days when his family used to rule the village have gone, but his attitude is still the same.'

In other words, old social hierarchies – especially those between landholders and peasants – continued to pervade the functioning and organization of the WUA. Ideals of participation, transparency, and democracy that had inspired the idea of WUAs as self-governing institutions, apparently were far removed from what was happening in day-to-day practice.

4.1.5 Gender-based participation in the UBIS

To understand further the gender dimensions of irrigation works in the UBIS, I classified irrigation activities into three types: irrigating the field (access/benefit); canal cleaning (labour/time); and participating in the WUA meetings (institution/decision making).

I asked this question to 151 users of the UBIS: ‘Who of your family participated in the following irrigation activities so far?’ A gender-based analysis of their responses shows that women’s participation in irrigating the fields was higher as compared to their participation in WUA meetings and canal cleaning (Figure 4.3).

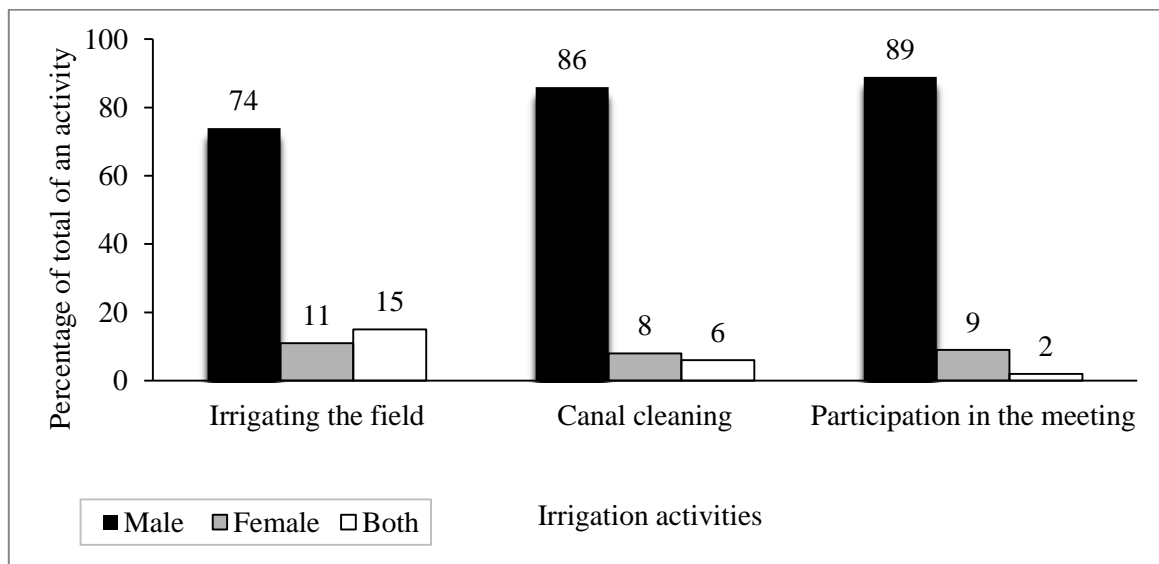


Figure 4.3 Gender division of irrigation activities in the UBIS, 2005

Source: Field study 2004/ 2005, n=151

The overall lower participation of women (5.6% in WUA membership) in the UBIS irrigation activities had shown here contrasts with WUA records on women participation during system rehabilitation and other activities which showed a higher level of women participating. Of the 151 households interviewed, in 11% irrigating the fields is women’s work and in 8% of the households, canal cleaning is women’s work. In 8% of the households irrigating fields is the responsibility of both men and women, whereas in 6% of the households both men and women were involved in canal cleaning. However women’s participation in the WUA meeting was found to be low with only 9% of all households reporting that women attended

WUA meetings. Another, 18% of respondents mentioned that hired labour or tenants did canal cleaning activities and those were mostly well off families.

Further field interrogations showed that the UBIS irrigators of that time belonged to the elite *Brahmin Chhetri* community, who did not encourage women to participate in meetings and other farm activities. Similar analysis with users of the Lamakhola irrigation system in Basaha VDC of Udayapur district (studied in 2004-2005), dominated by the *Tibeto-Burman* tribe, showed a higher rate of women's involvement in overall irrigation activities (in 27% of the households women irrigated the fields, whereas in 28% of the households women cleaned the canals, in 19% of the households women attended WUA meetings), as in this caste group gender roles are less starkly segregated compared to *Brahmin Chhetri* community. However compared to women's involvement in irrigating fields and canal cleaning, still their participation in WUA meetings was less.

To complement my survey findings, I analysed data from the WUA records on general assembly meetings and the different committees. Under the executive committee, different working committees were formed at the time of system rehabilitation to smoothly carry out the work. These committees included a construction committee, a money collection committee and a labour mobilisation committee. In addition, an advisory committee consisting of ten members was formed. These members included people who are senior in the village in terms of their past leadership, education and social status.

According to the WUA constitution, the general assembly is to be held every year and the executive committee meeting is to be held at least two times in a year. The tenure of the executive committee was for five years. During the time of rehabilitation, executive meetings took place more frequently so as to carry on the rehabilitation works.

My analysis of users' participation in different meetings showed that women's participation had been highest in the general assembly meetings held during the rehabilitation years (1999-2001). Their participation, even in relative terms, decreased in subsequent years. Also men's participation decreased considerably, illustrating that many WUA members considered the WUA mainly as a vehicle to get the rehabilitation done (see Table 4.2).

Table 4.2 Women's participation in general assembly meetings, UBIS

Date	Men	Women	Total	Women%
1999-12-13	134	12	146	8
2000-03-02	257	34	291	12
2001-04-11	142	16	158	10
2002-08-17	087	05	092	5
2004-03-24	087	05	092	5
2004-08-15	099	06	105	6

Source: WUA meeting minute book, accessed on 2005

A greater number of women were observed during the rehabilitation due to the participation of users from Ward 16, who did not receive water eventually. Most users of Ward 16 were *Danuwar*, a peasant groups who worked as labourers for head-end farmers.

As for women's presence in WUA committees, I found it to be consistently low (Table 4.3).

Table 4.3 Women members in different committees, UBIS (1999-2004)

Committee	Total	Women
Executive committee	11	2
Advisory committee	10	1
Construction committee	9	1
Money collection committee	-	0
Labour mobilization committee	5	0

Source: Field study 2004/2005

Of the seventeen executive committee meetings held between 1999 and 2004, women members were present at thirteen meetings. Though the total number of committee members was eleven, their full attendance was never observed at these meetings. The highest number of male members at a meeting was nine in two meetings. In the others, it ranged from six to three; hence the attendance of (some) men was very poor, whereas the presence of the two women members was more consistent.

Similarly, construction committee members were present at eight WUA meetings, but never were all members present. Likewise, the ten advisory members were invited three times to the WUA meetings, either general assembly or executive committee meeting. Of them only one member attended the meeting that was a woman member.

These attendance figures show that when there was an opportunity for women to get involved in WUA management, they would make use of it, to the same extent as or even more than men.

Women in WUA decision-making

What was the influence of these women members in WUA meetings? Individual interviews with them showed they experienced difficulties in influencing WUA decisions, even though they did attend the meetings. One of them said:

'Some male members do not attend the meeting. They finalized the decision outside the meeting. It makes it difficult for us to understand our role. Besides, men can continue attending prolonged meetings, but we cannot. We have to go back home and do the daily household chores. For men, their wife will take care.'

The woman committee member of Ward 16, later replaced by a woman from Ward 17, said:

'Thula Bada le boleko thauma hami ke jannu ra bolnu. Bolepani suncha kastle. (When the people who are well known and elite are speaking, how can I speak? If I speak, too, who will listen to me)?'

This woman, who considered herself less educated and was from an ethnic community, was diffident about her ability to speak up in public.

Socio-cultural norms and values

To understand the lower participation of women in irrigation activities, I undertook further observations and inquiries at farm level. I found a major reason for it in the socio-cultural gender-based hierarchy of the *Brahmin Chhetri* community, 83% of the users in the UBIS belonged to them. The field inquiry revealed that women of this community were discouraged to attend meetings with men and to play an active role in outdoor activities like canal cleaning and irrigation in the field.

The social rules that encourage women to stay within the boundaries of their homes and families made it difficult for women of female- to headed household irrigate their lands. The female head of such a household from the *Basnet* family group, who was ranked C i.e. those who produce enough to eat but no surplus during the wealth ranking exercise, narrated her plight:

'I am fifty four. I am daughter of a Basnet. I have four children. I look after both household work as well as farming. My husband worked as a government employee for twenty years and was posted in a faraway district. Though he is home after retirement, I continue looking after farming because he is not used to this. I had to mobilize farmers and resources including irrigation for farming.'

I inherited the family property in the absence of a son in the family. Hence our home is surrounded by other Basnet families. Our family income comes from farming and my husband's pension. Twelve Katha of our land are irrigated by the UBIS. But even for paddy there are quarrels to irrigate the fields. For winter, the rich leave their land fallow

as there would not be water in the canal. Only poor farmers grow wheat and maize if they see a chance to get water.

People steal water. I go to the field to negotiate with others. Being a daughter of a Basnet, if I make a loud voice, my own family members label me as Utaulo and Chhada.⁵

The Basnets are not going to change.’ (Pointing to a hamlet called Nayabasti of landless people far away at the horizon, opposite her house). ‘One day Nayabasti people will win over the Basnets economically and politically. They have less social barriers for women to come outside compared to us. The women go to work outside and their men do some other work to earn. If I go to clean the canal, my family members will laugh at me. I would have been emancipated if I were born in a poor family rather than this rich one.’

This narrative indicates that women’s participation in the UBIS in irrigation activities was determined by social hierarchies, norms, and values. But gender-based irrigation relations in the UBIS were also found to be changing, as I discuss below.

Trend of feminization of irrigation

Further interviews with users indicated that there had been a change in gender relations in the last few years, especially around canal cleaning. Women’s involvement in the different domains of irrigation had increased due to growing male absenteeism in the village. It was further triggered by the political conflict from 1996 to 2006.

Here are the narratives from two cases, a woman and an elderly man irrigating at different points of the systems:

Mr KC migrated with his family to Babari Siran, the headend of UBIS from the hills in 2005. He went to Dubai the same year after purchasing land on loan. Thereafter, Mrs KC lived with her 11-year old son and looked after the household affairs. She planted paddy in that winter because the family did not have enough rice. Located at the head end of the UBIS, she could bring water to her field to grow paddy. She cleaned the main and branch canals with her son to bring water to her field. Her mother-in-law had been living with the unmarried brother of Mr KC at the same village. But this son had also gone abroad to pay the loan he had taken to purchase the land. She recalled that she participated in canal cleaning four times and other times she sent paid labour, Hali. She recalled:

‘A few years ago, there used to be only 10 women among 60 users to participate in cleaning the canal, whereas now the number of women who come to clean the canal is equal to men.’

In another case, Mrs K who lived at the tail end at Ratmate was equally involved in canal cleaning like her husband. Unlike the head end, the tail-end farmers had to spend more time

⁵ Both terms refer to something vulgar in Nepali.

on looking after water in the canal. In 2004, the family spent fifteen days cleaning the canal during the rainy season. Seven days each, the husband and wife contributed labour.

An elderly man opined reasons for changing gender roles in irrigation:

'Female-headed households were not asked for canal cleaning in the past. It is because the work was heavy requiring a lot of labour. In the past, the number of female-headed household was few and they were mostly widows. The number of female-headed households has increased with men going out for work. Hence the committee made a rule that every family has to contribute equal labour to clean the canal, whether it is a man, woman, or hired labour.'

These three narratives from users suggest that canal cleaning in the study area had become feminized. But the same development, let alone a changing level of women's participation, was not found in WUA decision-making.

Negotiation and access

Further study on decision-making in the UBIS WUA revealed that access to water was a function of negotiation among different actors. In the process of negotiation, users were found to have different abilities to negotiate access to water.

For example, the farmers belonging to the *Danuwari* caste group of Ward 16 could not bargain with upstream users under *Brahmin Chhetri* domination to bring water to their fields. As shown above, a woman who had received some water to irrigate her plot also struggled to negotiate with her neighbour to irrigate her plot fully.

Two contrasting cases show how access is related to the ability to negotiate:

Changing water distribution rules

The main irrigation canal of the UBIS bifurcates, one branch irrigates a command area spread over the hillocks of Ratmate Ollo and the other irrigates Ratmate Pallo. The first hillock was dominated by *Basnet* families, where the WUA secretary resided. The second was populated with hill migrants who were economically weak. The hill migrants' population was greater than the *Basnet* families but the command area was less.

Based on command area, the WUA in the past had agreed on a weekly water distribution schedule giving five days to the *Basnet* families and two days to the hill migrants. But two days of irrigation for the hill migrants' plots was not enough. In 2004, the migrants negotiated with the *Basnet* brothers to be allowed to irrigate more days as they had to produce more given their small plots to meet their food needs. Mrs D, a hill migrant and a committee member, felt proud about the way they had successfully argued with the brothers:

'Your (Basnet's) farming is to sell the crop, ours is to eat.'

Finally, the *Basnet* landholders agreed to irrigate for four days and the migrants for three days a week.

The plight of female tenants

Mrs A had moved sixty years ago from a nearby district to Gaighat with her husband to work for one of the *Basnet* families. The family gave them a four-*Katha* plot of non-irrigated land for their service. For the last seven years, she lived alone after the death of her husband. She managed to get two *Katha* of irrigated land from the *Basnets* in tenancy because the non-irrigated land was not enough to meet her needs. She cried to the researcher that she hardly would get water when required. She complained:

'The landholder and his people do not allow me to irrigate. Rather, they ask me to accept grains from them. Often I survive on whatever they give me. I feel humiliated waiting for a long time in their yard asking for some grain. I would prefer to grow on my own.'

These two cases show how users could (not) successfully mobilize support and negotiate to secure water access. In the first case, hill migrants used their position in the WUA committee and their numbers to change the WUA rule related to water distribution in their favour.

In the second case, a woman tenant failed to mobilize support. She was neither in the WUA nor was her social position respected; hence she failed to access water.

To conclude for the UBIS: although the irrigation policy prescribed a minimum level of women's participation in WUA committees to ensure at least some women's participation, in practice selection of women members was based on nomination by local elite members rather than on women's own selection and choice. The influence these women could exert in decision making was embedded in wider power relations among the committee members. These power dynamics could for instance be observed in WUA leadership, the framing of WUA rules, and negotiations about accessing irrigation water in the field. The elite families who used to control resources in the village continued to be represented in and oversee the WUA. WUA involvement in resource mobilization, water distribution, and in rehabilitation added to their social prestige as well as gave power to control irrigation resources.

Users' participation in the UBIS was found to be a dynamic process resulting from social power relations. Users who were able to use their agency either by raising a collective voice, or by their using a social network or location, succeeded in accessing irrigation water.

4.2 The Baruwa Irrigation System (BIS)

This system is located downstream of the UBIS on the left bank of the Baruwa River, and is also downstream of all the other 4 water systems along the river. The system irrigates a command area that belongs to Ward 3, 4, and 5 of Triyuga Municipality (see Figure 3.1 and Figure 3.2 in Chapter 3).

A brief history of BIS shows that the local *Chaudhari Tharu* community had constructed the system initially. Farmers could not recall the exact year of construction. The system was expanded in the 1970s, when *Chaudhari* families living on the right bank of the river moved to the left bank after a flood and subsequent river bifurcation.

Before government intervention in 1991, water management used to be the responsibility of a traditional institution of the *Chaudhari Tharu* known as *Samaj*. A formal water users' association was formed in 1991 when the system was selected under the sub-project of the ISP. The WUA received further government funding in 2003 to improve the system infrastructure. Though the first rehabilitation in 1991 had been carried out by a contractor, the WUA itself implemented the second in 2003.

The district irrigation office handed over full system management to the WUA after completion of the system rehabilitation in 2003.

A detailed study of system management showed that water management in the BIS followed both the formal WUA rules set out in the Irrigation Policy as well as traditional practices of water management.

4.2.1 System Infrastructure

The system consisted of a side intake and open main canals of 1.75 kilometres. The river was wide at the intake up to 400 metres. The diversion canal after the intake was as long as a kilometre in order to reduce velocity of water. This avoided possible damage to the headwork during the rainy season.

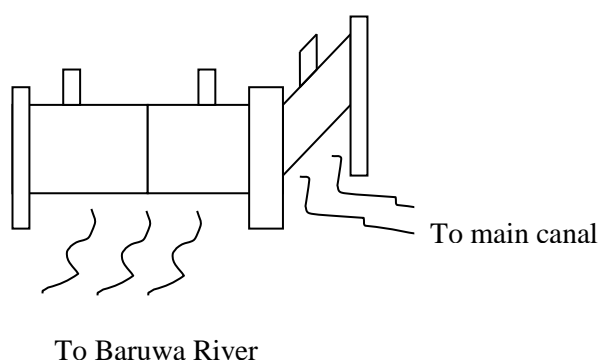


Figure 4.4 Intake structures of BIS

The Baruwa River was usually dry in winter and spring seasons due to low rainfall, and then mainly had a sub-surface flow. So, the system functioned only in the monsoon rains that triggered a runoff between July to September. The initial canal length of 1.6 kilometres was extended to 1.75 kilometres after completion of the rehabilitation.

The old side intake that used to be a brushwood weir⁶ was improved with the construction of a permanent structure of iron gates and cement walls. There were two gates at the headwork to control the flow, one to the river and another to the canal (see Figure 4.4). During the rainy season, there was a threat of the river flood damaging the canal. At this time, farmers closed

⁶ A diversion structure made of small branches that have broken off from trees and bushes.

the gate to the main canal allowing the other gate to drain water to the river. Since the river bed has subsurface flow in dry period, the gate to the river would be closed to divert water to the canal.

The idle canal length of the system was 400 metres. The net command area developed was 70 hectares. The canal discharge was 250 litres per second. There were 8-division boxes, 2 foot bridges, and 6 Hume-pipe super-passages. The main canal dimensions were trapezoidal, 1x1 metres in size.

In the rainy season, the canal flowed at full capacity. But during the dry period, there was evidence of conflict due to water scarcity.

4.2.2 Social organization

My discussions with irrigation officers revealed that they had a positive image of the BIS, and considered farmers’ participation in system management noteworthy. They told me that the active participation of the members of the WUA in the rehabilitation of the system had reduced seepage losses and increased system efficiency.

It struck me during the field study how water management in Baruwa followed both *Chaudhari Tharu* customs and formal WUA rules. This was happening because of the social organization of the users, where *Chaudhari Tharu* tended to dominate.

Users’ composition

The social organization of the BIS showed *Chaudhari Tharus* as the dominant group (61.5%), with a majority of men users (87%), and one fifth of the users owning less than five *Katha* of land. Other castes included *Brahmin Chhetris*, *Magars*, and *Danuvars* (see Figure 4.5).

Gender**		Caste composition (%)**		Irrigated land ownership*	
		Caste category	Population	Land in <i>Katha</i>	% user household
Men 171	Women 23	Chaudhari	61.5	No irrigated land	7
		Brahmin Chhetri	17.5	< 5	20
		Magar	8.7	5 to 14	38
		Danuwar	6.5	15 to 29	21
		Biswakarma	4.6	30 to 49	9
		Mushar	.06	50 to 140	5
		Rajbansi	0.6		

Figure 4.5 Summary of users’ profile of the BIS, 2005

Sources: *Field study 2004/2005 n= 126 (sample size 74%) ** WUA records 2003, fieldwork 2005

Chaudhari Tharu families in the command area lived in hamlets of 5 to 20 households. Such a hamlet was called a *Pati*. The family members living in a *Pati* must call other members to ceremonies like *Bibaha* (marriage), *Bratabandh* (function to celebrate the adulthood of a boy-

child), funerals, etc. The *Jewar* was the leader in such societal meetings. To convey messages announcing these ritual ceremonies among the members, a person with a special function called *Gorayat* was selected. Most of the time, the *Gorayat* was a man from a landless community called *Mushar*.

There was no rule to say it should be a man. It is a customary understanding that it is easier for a man to roam around in a village than a woman. The *Gorayat* not only announced ceremonies, he was also involved in conveying messages related to water management within the *Pati* and across villages. The *Gorayat* would also call upon people to contribute their labour for canal cleaning at the beginning of the rainy season. Any users who had prepared land for paddy and were in need of irrigation water would have the right to ask the *Gorayat* to start mobilizing labour to begin the annual cleaning of the canal. The activity in which all beneficiary household participated to clean the canal and bring water to the fields was called *Hansari*. Farmers would pay the *Gorayat* paddy on an annual basis for his services. Some hill migrants would pay in cash. At branch canal level, members would take the lead to clean the canal in the same manner.

This practice of involving of the *Gorayat* and *Jewar* even after the establishment of the formal WUA shows that water management in the BIS was partly taking place following traditional practices.

Landholding pattern and tenancy

I conducted a survey with 126 users in 2004-2005. The data show that about one third of the users (35%) were tenants, of which 20% were landless. Another 17% of the users lease out their land for tenancy, leaving some 47% of users not involved in tenancy. Of the latter, 52% owned more than 20 *Katha* of irrigated land. Fig 4.6 show there was a wide range in landholding size.



Figure 4.6 Percentage of user households in lease contract in BIS, 2005

Source: Field study 2004/2005; n= 126

These data show the BIS had a high social stratification in land-ownership and the percentage of tenants and landless farmers is noticeable. So it was important to understand how the WUA as a water institution would ensure equitable access to its members.

4.2.3 The Baruwa Water Users' Association

The WUA of the BIS functioned to mobilize resources for system improvement, liaise with officers, and become involved in those water distribution issues that were not covered by traditional institutions. The WUA had not conducted a general assembly meeting since the second rehabilitation in 2003. Users did not ask for this, and the WUA did not find it important. Also, the WUA had not renewed their formal membership with the government authority when the field study was conducted.

The WUA president at the time of study was an active, middle-aged man. He owned about 6 *Katha* of land. He was ranked highest for his social contribution during a social status ranking based on social contribution and popularity.

The secretary of the WUA was a school teacher. He worked in a distant VDC in the district and was absent most of the time as a consequence. As such, the BIS did not have an office. Any communication to the WUA was addressed to the president at his house. All WUA documents were also kept at his house. Meetings of the WUA were held there also, for it was centrally located.

A survey conducted among 74% of the users (126 persons) on their knowledge of committee members indicated poor awareness about the WUA among members, 40% of the respondents

remained quiet but did express their confusion about what a WUA committee was. Another 34% did not know about committee members. Only 26% knew of them.

Apparently, members were not familiar with the use of formal terms like ‘committee’ and ‘users’ association’. On its part, the WUA had not been active since the rehabilitation.

I conclude that the lack of WUA activity since 2003 was an important reason why many users were not familiar with the WUA committee. This would question the legitimacy of the WUA in the BIS.

Formation and functioning of the WUA

The WUA had been formally registered with the district water resource committee in 1991. The first WUA president of the system had been selected on the basis of consensus among users. He was the then village Panchayat leader.

The first committee consisted of only eleven members, all men. The budget for rehabilitation work was NRS 1.1 million. Farmers contributed 10% of the cost. The work was done by a local contractor under the supervision of this committee. According to the WUA leaders, the rehabilitation work was crucial for the functioning of the system, although canal lining could not be carried out. The committee continued for 12 years.

A new WUA committee was formed in 2003 with Mr C as a president; he used to be vice-president in an earlier committee. The new committee, especially the president, took further initiatives and secured additional funds from the irrigation office to carry out irrigation work. In the second rehabilitation, the main canal lining was carried out making it trapezoidal in shape, achieving a stable structure.

An engineer at the district office mentioned the system rehabilitation as an example of a successful action of the district office.

The WUA president, commenting on the canal design, said:

‘A trapezoidal structure is strong. Hence we requested the engineer to design such a canal although the cost of lining is expensive compared to a rectangular one. We said we will save money by contributing labour, if needed.’

The second rehabilitation in 2003 was budgeted at NRs 1.15 million. The WUA shared the cost to an amount of NRs 0.3 million. In contrast to earlier rehabilitation work, this time the WUA itself took up the construction work, for which the Irrigation Office paid them NRs 0.85 million. For this system rehabilitation, each farmer contributed cash at the rate of NRs 17.50/*Katha* of irrigated land. However, their labour contribution was irrespective of irrigated landholding: every household contributed labour for an equal number of days.

Membership

According to the BIS constitution, those who cultivated in the command area were considered members of the WUA. The WUA committee meeting held in December 2003 made rules to collect non-refundable deposits from any newcomer in the command area, to meet the initial cash investment of the farmers during system rehabilitation. The rule was made considering the period of use of the system. For example, deposit of NRs 17.50/*Katha* was paid by beneficiaries initially before 1992. Others who purchased land later would pay NRs 17.50 and additional cost- who had purchase land in the command area between 1992 and 1995 would pay NRs 12/*Katha*, between 1996 and 1999 NRs 10/*Katha*, and between 2000 and 2003 NRs 5/*Katha*.

Such rules were not found in any other system studied. The two systems, the BAIS and the UBIS located upstream of the BIS and dominated by migrant *Brahmin Chhetri*, had a practice of collecting water fees, and new-comers would gain a water right by paying the annual fee either in cash or in kind, and by participating in the annual cleaning.

After the system rehabilitation in 2003, the first general assembly (GA) of the BIS took place only in June 2005. Water fee collection was not practiced until 2005. The WUA made a rule of collecting a water fee of NRs 2/*Katha* at the 2005 GA, where only 25 households participated.

The meeting also decided to accept the request of a neighbouring village in Dik Tole to extend the canal and provide water in the rainy season on condition that each new user would pay an initial deposit of NRs 17/*Katha* and the above, variable water fee.

Water distribution

In the BIS, the formal WUA committee played a nominal role in water distribution and conflict management. Rather, the WUA president would call for co-operation among the users to share available water. He told them:

'I and the committee made an effort to bring funds to improve the system. We have brought water. It is up to you (users) to co-operate to share water among you.'

After the annual canal cleaning, users would agree among themselves about the irrigation schedule. This did not always happen smoothly or harmoniously, with actual decisions about whose turn it was to irrigate often taking place in the field at the time of land preparation. Accessing irrigation water for one's field in actual practice happened through processes of daily negotiations with neighbouring irrigators. I discuss this further below.

A male event-documenter who was a branch committee member of the WUA, narrated this day-to-day negotiation to irrigate land as follows:

'20 August 2005: When I reached the field, Mrs K was getting angry with Mrs C because the latter had used all the water to irrigate her land. She was shouting at her for not having saved some for her. They argued for a while. Finally, I intervened to break up the

quarrel. After that, I went to another field for weeding, where Mrs. R was irrigating her field. At the same time, Ms S arrived and asked to share the water equally between them. They did not argue like Mrs K and Mrs C, and agreed to share. For paddy everybody wants to irrigate generously, but this has always been a bone of contention between the villagers. If I cannot irrigate in the night, irrigating in day-time is difficult.'

In another instance, this user narrated:

'20 September 2005: I hurried to my land where I found two men, Mr S and Mr B, quarrelling over the water. Both wanted more water than the other would give. I, somehow, tried to settle their dispute and divided the water equally between them. Then, I moved towards another field where I saw my brother watering his field. After he finished, I started watering my land. Mr T also arrived and started to water his field. Then he went home. I used his share of water. In the meantime Mr D and Mr R of Gaighat (absentee landholders) arrived. I said: 'Brothers, let me water my field for a while because I am almost done.' Mr D agreed with me, but Mr R didn't. Moreover, Mr R started watering his field. As a result, the water-flow reduced. At last, he blocked the main outlet. But I went on my own to open the outlets and returned home after irrigating my field.'

Source: Daily diary, male event documenter 2005

Though the WUA president claimed there was enough water in the canal, users were found to be struggling in the field to ensure irrigation for their plots. In the first observation, all irrigators were women. For women, irrigating in the night is troublesome, so they appeared to be in a hurry to irrigate their fields during day-time. A household with a man at home to irrigate at night would be prepared to do this, to avoid hassle in the day-time.

In interviews with the WUA president, he did not appear keen to get involved in water distribution or to manage water conflicts. He agreed with and allowed traditional practices of sharing water and relied on the *Samaj* to solve conflicts.

Conflict management

Water-related conflicts were resolved by traditional leaders in a meeting of the *Samaj*. For instance, a water conflict in August 2004 was resolved by the *Jewar* in this way:

August 2004, Portaha: R and B are brothers and have their field next to each other. R's son went to irrigate his field and started diverting water. B's son-in-law arrived and started diverting water into his field. R's son-in-law argued he should get water first as he had arrived first in the field. He tried to stop B's son-in-law. The quarrel ended with B's son-in-law hitting R's son-in-law badly. The latter was rescued by the villagers and admitted in the district hospital.

R's wife called a meeting of her Samaj in the evening at 6 p.m. to seek justice. The Samaj meeting took place in the presence of the Jewar and asked B's son-in-law to pay the medical costs.

Source: Field observation

The involvement of the WUA, the *Jewar*, and the *Gorayat* in the BIS pointed at the simultaneous existence of formal and custom-based institutions to manage water. It may be noted that not only committee members could ask villagers to call a *Hansari*, rather any farmer could ask the *Gorayat* to do so, depending on the need for water once they were in the field. This kind of canal cleaning was done in the rainy season only, because the river would dry up in winter.

The roles of the WUA

As explained above, the WUA was especially active in system rehabilitation work and in maintaining contacts and liaising with government offices. Sometimes, it was also found to be involved in *Hansari*, since not all users participated in annual canal cleaning as in the past. The first *Hansari* in 2005 was called on June 18. Only fifty households participated, of which fifteen were female. Since not all the members came to clean the canal, WUA members present at the *Hansari* decided to call a General Assembly (GA) meeting after fourteen days. But then, the meeting was held with only twenty five members present. This meeting called for another *Hansari*, to be held after two days, this time with a penalty for absenteeism. It also announced the rule for water fee collection at the rate of Rs 2/*Katha*.

Regarding the very low participation of members in the GA meeting, the WUA president commented:

'Users will receive the decision of the meeting on a mouth-to-mouth basis. Users who did not come to the meeting are the ones who agree with our decisions.'

An absentee member commented:

'I did not go for the meeting as I knew it was about asking all users to come for Hansari. Since I had to finish some of my farm work, I decided to miss the meeting.'

Since the WUA role in water distribution in the field was only minimal, farmers' participation in WUA meetings was limited. Many field practicalities were dealt with at local levels anyway.

A narrative by a female farmer shows how users maintained their positions in traditional institutions to ensure their water access in the field:

'My mother-in-law had four sons. All of us are separated. We had a meeting headed by the Jewar to discuss about a function to offer food to society members.

The meeting decided to collect NRs 20,000 from each brother. For my family, it meant taking a loan to organize the function.

It is important for us to maintain societal norms, as we need society members when we have problems.'

This indicates that users did not expect any water-related justice from the WUA, rather they relied on traditional practices of justice. This would have different implications for gender-based participation in the WUA and its link to access water in the BIS.

4.2.4 Gender-based participation in the BIS

In the BIS, 13% (18 out of 171 users) of the irrigated land was in the name of women (WUA records 2003)⁷. Of these women, one owned 30% of total land in the name of women, three others owned 7 to 14% of the same. Of the remaining fourteen women (83% of the women) nine owned less than 4 *Katha* of land, not even enough to feed a family of four.

This had implications for women's visibility in the WUA committee.

The first committee consisted of eleven men, the second (in 2003) included one woman among the eleven. This was even though the second rehabilitation had taken place after the Irrigation Policy of 1992 that called for twenty per cent women's participation. The BIS, then, showed only nine per cent.

Nevertheless, as in the UBIS case, the regularity of attendance of the one woman member was consistent compared to some male members in the BIS. Out of 18 committee meetings held in 2003 over a 10-month period for the rehabilitation work, she was present at 16.

Women users' participation in irrigation

Like the UBIS, this BIS showed that more men were engaged in irrigation activities than women. My survey looked at which member of a family was involved in the three irrigation activities classified, viz. irrigating the field, canal cleaning, participation in the meeting. The BIS showed a remarkable level of women's involvement irrigating the field compared to their participation in meetings; in fact they were as equally involved in it as men (Figure 4.7). Female-headed households in the BIS were found to be doing all three activities.

⁷ There is a trend of lack of women in WUA committees. Of the six irrigation projects implemented under the SISP in Udayapur district, four systems had only two women in a nine-member committee. Another WUA had three women out of fifteen committee members. The lack of women in WUA bodies is related to WUA membership based on land-ownership or being head of a household. Only 10.84% of women of Nepal owned some agricultural land in 2001 (Adhikari et. al. 2009: 30).

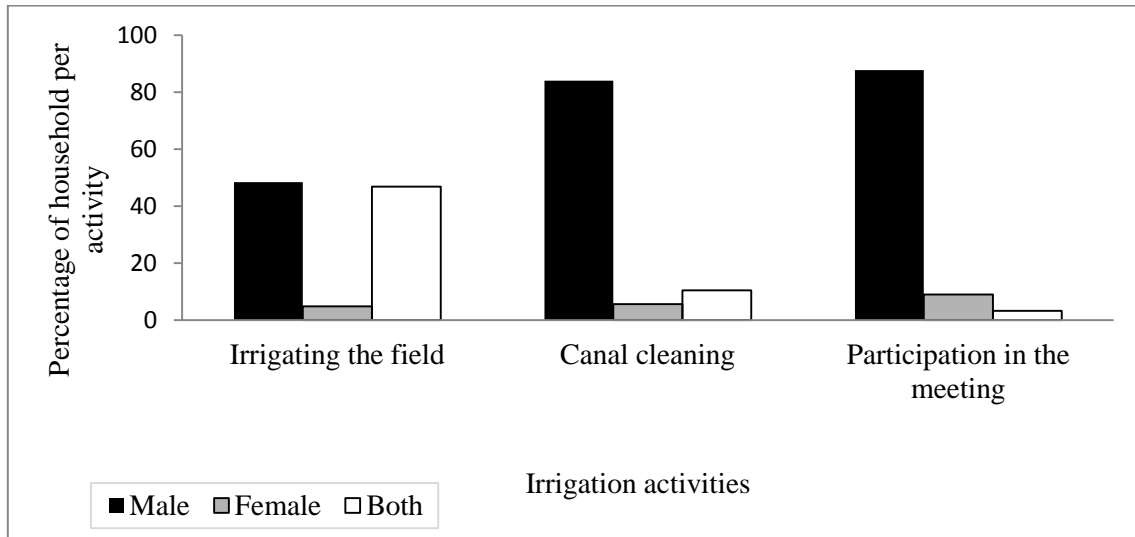


Figure 4.7 Gender-division of irrigation activities, 2005

Source: Field study 2004/2005, n= 126.

A personal narrative from a female irrigator shows her daily struggle to irrigate the field:

'April/May, 2004. The rice field was getting dry and I got tensed up. So I went in a hurry, only to find that Mr A was irrigating his fields. I blocked his supply and directed the water toward my field. But Mr C again blocked the supply and directed water to his field. At this, I was very annoyed. I went to pull his shirt and took him to my field to let him see with his own eyes the dry condition of my rice field. After a long discussion, he finally agreed to allow my field to be irrigated. The other day, with a heavy heart, I went to the field again. My house is far from the field. Hence, whenever I go back home, someone or another will divert water to their fields in the meantime.

Since the water was little, I could only irrigate two terraces the other day. The water was again diverted to Mr A's field. I asked him. He refused. I told him it was equally important to me to irrigate my field as to him, but obdurately he continued irrigating. On the other side, Mr S was blocking my water outlet with mud and redirecting it to his field. When I asked him he said that he intended to sow seeds that day and he wouldn't go back without sowing the seeds. I had to give up and started cutting grass.'

Source: Daily diary of female event documenter, BIS user

Gender-based dimensions of water distribution practice

The water distribution practice in BIS, based as it was on this 'first come, first served basis', had gender-based effects for households and individuals. A household analysis of landless farmers, who survived through tenancy, shows that particularly the difficulty for women to irrigate at night endangered their crops and harvest, and thus weakened their ability to sustain their livelihoods.

An illustration:

K, a landless farmer aged 45, lived with his wife aged 40, two daughters of 17 and 16, and a son of 6. He belonged to Chaudhari community. Their livelihood was based on farming on 16 Katha of land that they sharecropped. The land belonged to the ex-president of the Bhusune Asari Village belonging to Brahmin Chhetri caste group.

K married off his elder daughter, for which he borrowed money. In the resultant financial stress, he decided to go abroad for employment. He took a loan of NRs 90,000 at 4% monthly interest from the landholder whose land he had been cultivating for the last fourteen years. His wife said that the landholder encouraged him and arranged another loan for him to go abroad. He could not come back home for three years after going abroad. He sent money thrice. First, NRs 93,000 and the family repaid the landholder's loan. Next he sent NRs 56,000 and they paid off the debt of his daughter's marriage. Next he sent NRs 50,000. The savings out of these earnings were spent on day-to-day family needs.

Before he went, the family used to save enough cereals for annual consumption from their 16 Katha of land, even under the share-cropping arrangement. In his absence, the production decreased by half as the left-behind women experiences difficulties accessing irrigation water for the field. K's daughter expressed:

'Instead of benefit, there is a loss by my father going abroad. The only benefit is that the family loan is paid. But the family at home has to buy cereals unlike when he was present. We, who are only women at home, could not ensure water for our crop. Had my father been with us, the production would have been in surplus.'

Other households with only women experienced similar difficulties in negotiating access to irrigation water. In extreme cases of conflict, they would seek support from the *Samaj* for justice. The importance of the *Samaj* also shows in their efforts to maintain traditions and respect rituals.

In conclusion, the BIS presents a case where the WUA existed more to raise and manage external resources than to manage water on a day-to-day basis. For that reason, WUA meetings and committee tasks, and related participation of users in these, were limited.

The local practice of water distribution based on a 'first come, first served basis' had different implications for male and female farmers, especially as it was more difficult for women to irrigate at night when day-time irrigation proved difficult to negotiate. In the absence of a proper regulatory mechanism - like having a peon to supervise water distribution - the water distribution in the field consisted of a process of negotiation on a one to one basis. Hence participation in and access to different irrigation activities in the BIS was subject to social power relations and one's ability to justify and argue for water in the field. The policy effort to ensure a minimum number of women participating in the WUA committee did create chances for some women to be involved during rehabilitation. Yet, as the WUA is hardly

involved in water distribution, participation of users did not help to address problems of water distribution in the BIS.

4.3 The Bhusune Asari Irrigation System (BAIS)

This irrigation system lies on the left bank of the Baruwa River, downstream of the UBIS on the right bank, while it is upstream of the farmer-managed Asari Irrigation System (AIS) and BIS (see Figure 3.1 and 3.2 in Chapter 3). The District Irrigation Office constructed the system under the Irrigation Sector Project (ISP) in response to an application made by farmers of Bhusune Asari village, in Ward number 4 of the Triyuga Municipality. The construction began in 1995 and was completed in 1996; the WUA took up system management fully in 1997. The system received second support from the government for rehabilitation in 2004, with works taking place from 2004 to 2005.

As I observed the ongoing rehabilitation work in my field study, this specific case study allowed for additional attention to gender-based participation and WUA leadership during rehabilitation.

4.3.1 System infrastructure

At the time of the study, the system consisted of a side intake, 3 siphons, a main canal of 6 kilometres long, and many local canals. The intake structure was relatively stable and problem-free compared with the problems farmers faced from clogging of the siphons and water leakages at some places in the main canal. The gross command area planned at the time of construction was 144 hectares. But this could not be achieved, and water did not reach the tail-end villages, Behedwa and Bhatikharka. Dry earthen canals with cemented lining at some places were observed in the tail- end villages during an initial field visit in 2004.

This is the only system having a siphon structure in the study area. The three siphons were located at different places: one at the idle canal length before the canal irrigated farm land, another at the head-end just before that point, and the last at the tail end.

The district administration office built a road on top of the tail-end siphon structure from 2003 to 2004, endangering the structure through heavy vehicle movement on this road.

Clogging of the siphons was another, major problem. This was partly because filters and sediment traps were damaged and poorly maintained by the farmers and the WUA. Also farmers disliked cleaning the siphons because they were dark inside and the possibility of snake bites was high. At the same time, the WUA failed to organize farmers to maintain the filter.

The canal had been damaged around a small leak, also due to actions to enlarge it by farmers from the downstream AIS. This way, they could divert more water back into the river to increase water availability at the intake of the AIS. This water stealing happened in the night. During a field visit in 2004, the size of the hole was found to be about 2 feet in diameter. The

BAIS farmers closed the hole with stones, only for these to be removed by downstream farmers during the night.

In this case, the poor infrastructure and complexity to maintain the siphon structures of the BAIS had allowed for some malpractice downstream. An institution to check and balance such actions was missing. It depended more on individual efforts from irrigators to raise their voices and try to deal with the concerned persons.

Because of the poor infrastructure, water availability was uncertain even for head-end villages. An event documenter of the BAIS who was a migrant (and a teenager) narrated the struggle to irrigate his friend's field at the head end:

'2005.03.21: Today my friend, requested me to accompany him to irrigate his field in the night. I went to his field at 8 p.m.. He had started irrigating from 11 a.m.. His land is only 5 Katha, and it was taking such a long time! Water in the canal was little as there was not enough water in the river. Slowly, the water flowing into the canal was becoming less and we realized someone had diverted the water upstream. We went up and opened the canal. When we came back, the land was dry because the water had been diverted to Mr R's field. I thought: if Mr R had not stolen the water, then my friend's field would have been wetted. We came back at 4 a.m. and went back again at 5 a.m. to see whether his land was irrigated; it was not....'

4.3.2 Social organization

After completion of system construction in 1996, the system was damaged in the following year. The degradation continued, which is why the local leader of the BAIS requested support from the Irrigation Office to improve the infrastructure. Also, tail-end users did not receive water on completion in 1996. The request was approved in 2004. During the rehabilitation in 2004-2005 the system consisted of 279 users (representing households), excluding two institutional members (i.e. schools). The rehabilitation in 2005 aimed at irrigating the land of tail-enders, and in the end it did.

Of the total users, only 8% were women. These women owned 6% of the total irrigated land. As in the UBIS and BIS, such data indicate a male domination of BAIS members.

Figure 4.8 gives a summary of profile of BAIS users, which again shows a predominance of *Brahmin Chhetris* caste group similar to UBIS.

Gender		Caste composition (%)			Irrigated land ownership	
		Caste category	Population	Land-holding	<i>Katha</i>	% Household
Men 279	Women 22	Brahmin Chhetri	52	56	< 5	44.6
		Chaudhari	29	30	5 to 14	39
		Tibeto Burman	10	8	15 to 29	14
		Danuwar	7	5	30 to 49	2
		Untouchable	2	1	50 to 140	0.4

Figure 4.8 Summary of user's profile BAIS, 2005

Source: WUA records on cash contribution, rehabilitation 2005

Regarding landholding, there were fewer extremes than in the UBIS and BIS, as smallholders were more common in the BAIS. About half of the users owned less than five *Katha* of land, with almost 40% owning land between 5 to 14 *Katha*. The remaining had more than 15 *Katha* of land. A user with the largest landholding had 60 *Katha*.

This landholding pattern was a reflection of the migration of middle-class hill families into the command area. Except for the *Chaudhari* and *Danuwar*, all other users were migrants. This demographic composition influenced the WUA functioning and users' participation in rehabilitation in this system.

4.3.3 The Water Users' Association

The WUA was formalized at the time of system construction in 1995. The first WUA committee was formed by local leaders from the upstream command area. They were actively involved in the process of requesting grants from the government for system construction. The first committee consisted of 11 men dominated by the *Brahmin Chhetri* from this upper command area. The members were educated, had off-farm incomes as government employees, and were considered the elite.

The absence of a woman member in the first WUA committee could be due to the silence of project guidelines about women's participation in such a body. The Irrigation Sector Project (ISP 1990-95) under which the BAIS was constructed did not have specific requirements to that effect. During the implementation of the Second Irrigation Sector Project, a follow-up of the ISP, a guideline to involve a minimum of twenty per cent women on the committee was circulated to users' associations by most Irrigation Offices.

Farmers suspected the first committee members of financial mismanagement of funds and lost confidence in the WUA after some years of construction. This was also because the committee could not organize farmers to maintain the system. Subsequently, upstream farmers who were receiving irrigation water formed a new committee.

WUA committee and voluntary contribution

The cost of system construction in 1995 was NRs 7.8 million. The Irrigation Office had hired an external contractor to construct the system, and the role of the WUA then was to supervise work by the contractor. When the system failed to irrigate tail-end villages, villagers suspected committee members were involved in mismanagement of the funds, together with the contractor.

In the year after completion of the construction work, the canal was damaged by heavy rain. Repairs were done, but the committee could not mobilize enough labour from users needed to repair the structure fully, nor would they spend time to motivate farmers or seek wider assistance. As a result, system degradation continued. A small hole in the canal became big and the siphon clogged. In the third year, Mr T, a hardworking illiterate farmer from Bhusune, took the initiative to mobilize a few users. They collected bags of paddy or cash from farmers at the rate of NRs 20/*Katha* of irrigated land as a water fee to create a maintenance fund.

A farmer said:

'Mr T carried the load of paddy collected from all of us. He went to sell the paddy to create the fund. He is not like earlier committee members who are reluctant to touch the soil.'

That was how irrigators realized the need to form a new committee that could organize system management. Since Mr T had proved his commitment to make the system work, he was chosen as the new WUA president. This committee again was represented by men only, but this WUA at least formed rules on water distribution, and created a systematic water rotation schedule. The way Mr T was selected as the WUA president and the new WUA formed shows that users demanded commitment from their WUA committee members.

There was no record of WUA expenditures and collection of funds. This was because most committee members were illiterate farmers, and the written documentation of decisions and finances was not considered important by them. Mr T could recall the expenditures verbally. Farmers believed in his efforts. They also appreciated the time committee members spent on physical work for system maintenance. So, the committee was liked by the farmers. However, the WUA bank account initially opened at the time of system construction was frozen since the balance was low.

The old committee members did not oppose the formation of a new committee. They admitted their past faults around system maintenance and agreed that the committee needed members who were committed to making the system work. However, when the grant from the government to rehabilitate the system was approved, these old members again showed an interest to be on the committee.

The WUA and working with the Irrigation Office

The second committee of the WUA requested the Irrigation Office for rehabilitation support and a budget of NRs 0.14 million was approved in 2004. The WUA felt the need to form a new committee so that members representing even the tail end could be included, as the rehabilitation was planned to expand the command area to the tail end. A new WUA committee representing different locations of the system was important to carry on the works at different locations. In this committee, farmers again selected Mr T as the president. Other members were selected based on location. Another criterion for selection was one's ability to read and write, which was deemed important to understand official procedures.

The new committee consisted of seventeen members of which five were women. By this time, the Irrigation Office had mandated a minimum of thirty three per cent of women for the committee (see chapter 6 for detail). This meant that representation of women members here was a direct result of official stipulations.

Once the budget for rehabilitation was approved, the WUA committee of the BAIS struggled to make it a success. They even mobilized experienced neighbours to become a part of this new, more inclusive committee.

Here is an observation of the first visit by officers to the system after the grant approval:

On 18 March 2005, a team consisting of a chief irrigation engineer, two overseers, and an Association Organizer (AO) visited the system to start the rehabilitation work. The WUA president Mr. T and the president of the BIS downstream, Mr. C, together with two other users, all men, welcomed the team next to the irrigation system. While visiting the system, Mr C was the one to speak to the officers. He showed the problems of the clogging of the siphons and the water leakages in the canal, and expressed farmers' interest in constructing an aqua-duct. The other users around agreed with him.

Mr C was also present to meet the officers, since Mr T and committee members had invited him to assist them with the officers' visit. Mr T and others believed that Mr C had experience of working with officers while rehabilitating the BIS, so his presence was considered helpful to properly express their needs to the officers.

The officers said:

'An aqua-duct is not in the approved design, but if farmers could save money it can be constructed.'

Mr C replied:

'We will work hard and make it possible to construct an aqua-duct within the allocated budget.'

After visiting the locations needing improvement, the team rested at the president's house. The officers explained the official procedures to carry on the work. The few men and women already waiting for the officers at the house of the president, Mr T, listened to the

officers carefully. A female ex-member from a Ward greeted the officers. The wife of the president, who served as a WATSAN volunteer to promote water and sanitation activities during the project implementation of the Asari drinking water system (ADWS) (see chapter 5), offered drinks to the visitors and added that all of them would work hard to make the work a success.

In this meeting, it was decided to call a mass meeting after two days. The meeting place was decided to be a community shed of the community forest user group. After the discussion, the team visited the canals downstream.

The chief of the office sensitized users regarding protection of the structure, when he observed the district development office had constructed a road above a siphon structure of the irrigation system.

After the officers had left, the committee members felt good. Mr T and others thanked Mr C for expressing their concerns about the siphon and aqua-duct to the officers.

The fact that they had invited knowledgeable neighbours shows the concern of the committee members about their ability to deal with official procedures. Since the president and other committee members were unable to read and write, they invited their more experienced neighbour for this important discussion with the officers.

WUA meetings and users' participation

So, a mass meeting was organized after the officers' visit to share information with users about it as well as about the official requirement to carry out the work. Also, the meeting was meant for the WUA to decide whether to take up the construction work locally or contracting it out. But there was low participation in the meeting and mobilization of users was postponed till the next meeting.

These are my observations of the two events:

20 March 2005: the mass meeting of BAIS took place. One of the committee members explained the agenda of the meeting. The points to be finalized were –

1) whether or not the WUA will carry out the work, and prioritizing the points and location for rehabilitation in the canal, 2) farmers' voluntary labour contribution, and 3) filing a complaint at the district administration office to protect the irrigation infrastructure against a technical wing of the District Development Office that had constructed the road above the siphon.

All committee members were present, but only about 15 to 20 household members turned up. There were intensive talks outside of the official agenda of the meeting about past unsuccessful experiences to improve the system. Some farmers raised the issue whether or not tail-end users should contribute labour to dig canals at the head-end. A woman member from the tail end who was actively participating in the discussion expressed:

'If we contribute to digging the canal at the head-end, farmers from there should also dig at the tail end.'

The meeting was diverted to forest issues, when the secretary of the WUA suddenly told them that forest officers had come to arrest the Forest User Group (FUG) president. This captivated the discussion for a long time: since the FUG members were from the upstream area, the upstream farmers became heavily involved in the discussion. Women users from the tail end then demanded that the participants' attention be brought back to water issues.

Towards the end of the meeting, both head and tail end users concluded they needed to be united. A committee member expressed how he was seen wrongly by another committee member from a tail-end village. So the woman committee member from the tail end remarked: 'We should all be careful: outsiders might try to break us, and create conflict among us.' She also emphasized the committee should be united.

The WUA president Mr C of the BIS was invited to this meeting as a guest to guide the discussion. He also stressed the importance of unity among the users. He warned: 'Committee members should not visit officials without informing other members. If we do so, it will create a communication gap between members and office-bearers. This kind of miscommunication weakens our organization. In such a situation officials find it difficult to work.' He also warned that such behaviour might lead to cancellation of the grant. All members agreed on this point.

They decided for the next mass meeting to be held after two days. The committee members asked each participant to inform their neighbours and mobilize them for the next meeting.

The chaos at the meeting was caused by users expressing their concerns and grievances with respect to the earlier committees. But whose grievances were heard depended on which users were present at the meeting.

The second meeting was held at 11.30. A few users came at the start, then slowly many others came in, but not on time. Even with the participation of about 60 users, the meeting could not start in time because of discussions expressing the pain of tail-end users, with doubts being raised on the ability of the WUA president, and suspicion brought up that the head-end users might betray the tail-end users as before.

This chaos continued for more than a quarter of an hour. Finally, a female ex-member of the Ward raised her voice, requesting all to focus on more positive words. A male committee member pledged their commitment to ensure that head-end users would support tail-end users in every respect to make the water flow up to the end. After that there was silence.

Then tail-end users voiced their concern that the president, though he had a good heart to work for the community, was not capable enough to understand the official procedures and maintain relations with officers, and might get cheated by the elite leaders of the head end.

Thereafter the committee decided to invite the WUA president, Mr C, from the BIS to be on the construction committee and guide the team.

The president, Mr T, gave two reasons for involving Mr C. One, he was known for his genuineness. He was the president of both a drinking water system (ADWS) and an irrigation system (BIS). In both situations, he had proved his knowledge and ability to work with officials, and succeeded in mobilizing funds, improving infrastructure, and providing water to the community.

The president and other committee members added:

'... Mr C knows where to buy cement and rods, and how to manage money...'

(The Irrigation Office would re-imburse the work done by the WUA only after twenty five per cent of the work had been completed. So, to do such work, the WUA had to mobilize at least 30,000-40,000 NRs before this reimbursement.)

The meeting decided to request Mr C to be the chair of the WUA construction committee. The majority of the users, especially tail-end farmers, believed that if Mr C would assume responsibility for community-level work, he would make it a success.

A member even commented:

'If someone delivers the work and gets some profit, it is okay with us! A person, who harvests honey, will lick honey from his hand.'

This comment was to say that a little bit of mismanagement of resources was okay if the person did the job of bringing water to the tail end.

These anecdotes show that the person of the WUA leader matters for ensuring the active participation of users in WUA activities and plans. The meeting showed that the majority of the users agreed to voluntary contributions for system construction and maintenance, as all wanted the WUA to help ensure their share of flow to their fields.

4.3.4 Gender-based participation

The social composition of the BAIS members shows that only eight per cent of the users were women. Nevertheless, proportionately women were well represented at the two meetings discussed. The low participation of women in the BAIS in general was the result of land-ownership and the dominant belief that irrigation meetings were men's work.

Who were the women participants?

About seven women were present at the two discussed WUA meetings. The women who were actively participating and raising their voices at that time came from de facto female-headed households, while one was an ex-member from the Ward. Other women who participated in the meeting were from poor families. They came to attend after discussing it with their husbands. The families decided that the wife would attend the meeting and the husband would

go to work for the family. The women communicated that their families survived on produce from the land under tenancy and daily wages earned by the family. A women participant put it succinctly:

‘When I go to work at the market, I will be paid less for being a woman. My husband earns more than me for the same work. Since attending the meeting does not give any income, we decided that I should attend the meeting.’

At the meeting, poor women clustered in one place together with men from a similar economic class.

Women’s labour contribution

Similar to their participation in the meeting, few women participated in the rehabilitation work, compared to men. Most of these women were land less or small landowners who had leased land.

Data analysis of farmers’ voluntary labour contributions for six days during rehabilitation activities in 2004-5, as per requirement with irrigation office shows that participation of these women was consistent.

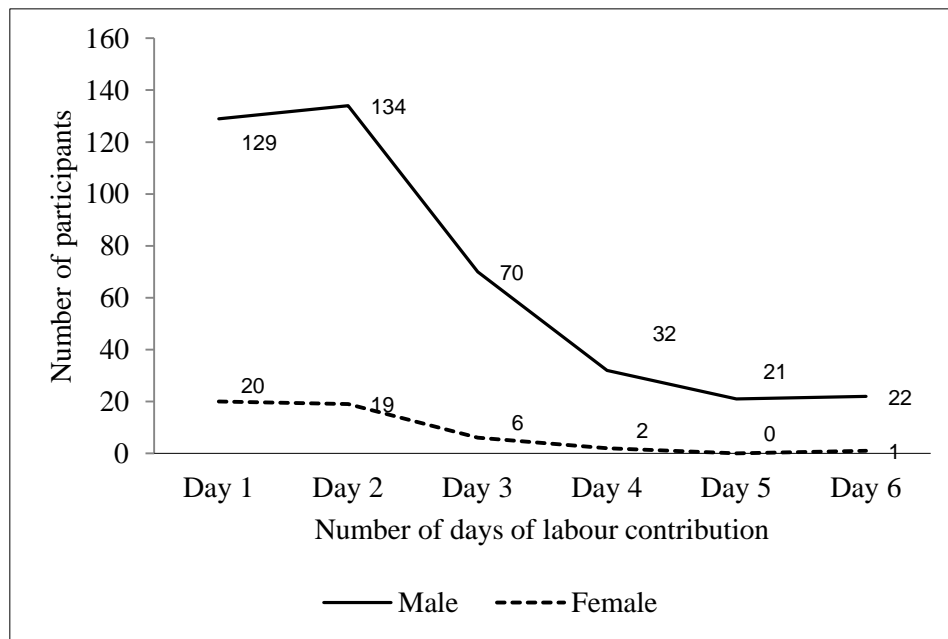


Figure 4.9 Gender-disaggregated data on users’ labour contribution in rehabilitation work of the BAIS, 2005

Source: WUA record, 2005

Fig 4.9 shows that the involvement of men was high initially, but drastically declined in later days. On the first day there were 129 men. This reduced to 15 men on the last day, whereas there was a relatively high consistency of women’s presence. The participants of later days were those who could not join the earlier days. What the data indicates is that the few women

members have equally contributed labour as the men members. Women's participation was even more consistent than that of some men.

Voluntary labor contribution

After the agreement to carry out the rehabilitation, one of the major tasks of the WUA was to mobilize users for their labour contribution. According to the Irrigation Regulation, farmers have to contribute a certain percentage of the total cost. 0.5 per cent of their total contribution has to be cash, to be deposited into the bank. They can contribute the rest in kind or cash.

The WUA implemented this labour contribution policy according to member-households, irrespective of how much irrigated land they owned, even though the cash contribution was on the basis of irrigated land size. This favoured large land irrigators, since they would stand to benefit more from the improved system.

Some irrigators with smaller landholdings raised concern about this at the mass meeting:

20 March, 2005: The WUA committee members discussed labour contributions to be made by the users. Women participants were mostly tenants who have taken land on lease. They were clustered with other men of a similar class. They raised the issue of contributing labour proportionately to the size of the irrigated land. One woman added: 'We have to work for food, we will not be able to work without pay for many days.'

A male farmer picked up her words and added a positive endorsement. But this communication disappeared after some time, as the majority of attendants did not pay attention to this concern and it was not discussed. This is because most users were either medium-size or large land-owners. Of those who raised the issue of proportional labour contribution, five were women and a few others were men farmers, all tenants.

In conclusion, the BAIS case shows that users' participation in WUA activities importantly depended on the trust users had in WUA leadership. Tail-end users did not see a direct benefit in participating in WUA activities, because there was a threat that water would not reach them. Participation of users increased when the WUA was headed by Mr T, as compared to the earlier WUA president who had been suspected of mismanagement of funds. It increased even more when Mr C accepted the invitation to become a committee member for rehabilitation work. Tail-end users, many of whom were women, influenced WUA decisions by participating in a WUA meeting. It was their suggestion to invite the WUA president of the BIS to chair the construction committee, as a way to ensure transparency and ultimately succeed in bringing irrigation water to the tail-end. Having faith in their leaders, members agreed to participate in the contribution of labour required for rehabilitation. However, not all users could equally influence WUA decisions. Issues raised by small landholders on labour contributions proportionate to irrigated land size were overshadowed.

4.4 Conclusion

This chapter set out to understand how women's formal participation in users' associations (WUAs) translates into voice in water decision making and access to water at community and household levels. The three case studies provided different illustrations of the linkages between participation, voice and access to water: The first case of UBIS, dominated by the caste group of *Brahmin Chhetri*, which was the ruling group in the past, illustrated how caste and class hierarchies permeate users' participation in decision making and access to water. The second case of BIS, dominated by the *Chaudhari Tharu* group - a local ethnic community - showed a plural legal environment with respect to WUA functioning, participation in WUA activities and water access. The third case - BAIS - was dominated by middle class hill migrants, illustrated how users' ability to read, write and their knowledge on working with officers as important requirements to participate in WUA and influence WUA decisions.

Both UBIS and BAIS failed to irrigate the tail ends of their planned command area, after the first construction works. In both systems, this work was carried out by contractors. With a change in the government policy that allowed WUAs to take up construction work instead of a contractor, the BIS and BAIS WUAs took up the work and managed to successfully irrigate the tail end villages. This new role of the WUA of organizing construction work resulted in different requirements for WUA leadership, and changed its role.

In all three case studies, the primary role of the WUA seemed to have been that of bringing in external resources for system improvement. Hence being able to read, write and the ability to deal with official procedure were important characteristics for WUA leaders. Since the majority of women lacked these abilities, none of the systems studied were lead by women.

In all the systems, women's participation in WUA meetings was less as compared to their involvement in activities like irrigating the farm and canal cleaning. Women's membership in WUAs was also less. The few women who had been participating in WUA meetings were either women of female headed households, or women of poor households. In UBIS, prevailing caste norms discouraged women's active participation in WUA activities. In the BAIS case the few women who participated in WUA meeting belonged to poor households, as the families decided that it was less costly for them to send women to attend the meetings (allowing men to work for wages during that time).

The chapter showed that half of the irrigators were not familiar with WUA committee members. This questions the legitimacy of the WUA. Many interviewees assumed that the WUA would dissolve after the rehabilitation work was over. This indicates that many users were not aware of the irrigation policy and the role of the WUA. This was partly because irrigation had been a community activity even before the government intervention. The WUA only came into being because of the formal arrangement with the government to have users' participation in project interventions. Hence, after the construction works were finalized, the

issues of water distribution and water conflict resolution continued to be dealt with by local institution - as in the case of BIS.

In all the cases, not all users were equally able to influence WUA decisions. Influence was clearly a function of position in the social hierarchy. This was for instance evident in the issue raised by the small landholders who proposed that labour contributions should be proportionate to the size of irrigated land owned. This proposal was overlooked by the WUA leaders, perhaps also because community irrigation activity used to consist of a yearly collective effort to construct a temporary weir to divert the water from the river, to the canal and to farm. The labour required for the same used to be mobilised per household irrespective of landholding size. In an earlier study of farmer-managed irrigation systems, E. D. Martin calls such unequal labour contributions an instance of systemic inequity (Martin, 1986: 301). On the face of it, the issue of labour contribution may not appear to be a gender issue. Yet, this study shows that it is linked to gender inequity. The economically weak households who have taken land on lease raised this concern in WUA meetings because they felt inequity in benefit sharing after the completion of the project. For example the large landholder produces more from the irrigated land compare to small land after the irrigation project completion. Expecting such issues to be addressed by minorities requires social action, which takes time. Thus a policy prescription that labour contribution be proportionate to the size of irrigated land maybe one of important way to minimize gender inequities in the sector.

In BIS, water distribution in the field was based on negotiations in the field and on traditional institutions. The field study showed these ways of accessing water were not necessarily (more) equitable, as one's ability to access water was importantly influenced by individual negotiating skills and power dynamics among the users.

All the cases showed that participation in irrigation management and ultimate access is not a straightforward issue of just membership, but entangled with wider power relations, social dependencies and hierarchies. In line with Ribot & Peluso's (2003) theorization of access as bundles of power, these cases show that the powerful could ensure irrigation, whereas the powerless were denied so. My findings concur with those of Ribot and Peluso, that access is the result of a constellation of means, relations, and processes that enable various actors to derive benefits from resources.

Although the quota policy to ensure a minimum participation of women in users' committees did have some effect, by itself it was not sufficient to create a more just management and distribution of water. Participation of users is centred on the opportunity one has for participating as well as the local authority and legitimacy of a users' association in water distribution. The ability to influence WUA decisions in one's favour is subject to one's ability to address these concerns in WUA meetings and to the chances of being heard by the WUA leadership – both of which are importantly determined by social hierarchies and norms.

Chapter 5: Accessing Drinking Water

'When I collect water from the community tap, I feel the tap belongs to the Sarkar, it is yours and mine. But when I collect water from my neighbour's tap, I feel weak and obliged.'

- Female user of community tap in 1997 and no more registered with ADWS WUA in 2005

'Since all of us (users of a community tap) cannot attend the meeting, we could not raise our concerns. Neither were the meetings regular where we could express our grievance. When the thula bada (dominant elite in the village) decides, we have to obey.'

- Male user of community tap, ADWS, 2005

This chapter analyses access to drinking water at community and household levels, to investigate how users' participation in formal local management organizations is related to their access to water. This was based on a functional question: 'How is access to drinking water arranged and mediated by users?' Accordingly, I explored issues regarding functioning of the system, WUA leadership, users' participation, and the differential gender-based impact of WUA rules on households and individuals of different socio-economic strata in respect of their access to drinking water.

This also allowed assessing the effectiveness of improving (women's) participation in WUAs as a policy tool that was meant to enhance the (gender) equity of water distribution.

The analysis is based on case studies of two drinking water systems: the Asari Drinking Water System (ADWS) and the Gaighat Drinking Water System (GDWS). The ADWS is a rural water supply system that had been implemented by the district office of the Department of Water Supply and Sewerage (DWSS) under the Third Rural Water Supply and Sanitation Project (1992-97). The GDWS is an older system with a larger capacity and coverage than the ADWS. The GDWS is a rural water supply system that is in the process of transforming into an urban water supply system, bringing in new demands and requiring managerial, financial, and technological changes. The ADWS supplies water to Wards 3, 4, and 5, while the GDWS supplies water to Wards 1, 2, and 17 of the Triyuga Municipality, located respectively on the left and right banks of the Baruwa River (see Figure 3.2 in Chapter 3).

According to project reports, both systems had adopted participatory approaches to involve users during project implementation and management. The case studies analysed gender-based access to water with respect to this participatory approach.

I visited and studied the ADWS seven years after handover to the WUA, in 2004-05, and the GDWS too.

5.1 The Asari Drinking Water System (ADWS)¹

5.1.1 A brief history

Before the ADWS, villagers used to collect water from wells, springs, and directly from the Baruwa River. However, wells were few and some of them were abandoned as the water quality was poor. The springs were located far away. Villagers used to walk hours to collect water. Therefore, the local leaders of Ward 4 and 5 requested the DWSS district office to support the construction of an improved piped water supply system. In 1993-94, the authorities approved a budget for this construction, which started in the winter of 1994 and was completed in 1996.

Construction activities met with several difficulties, primarily because of the high waters and flood flows in the Baruwa in 1995. These had damaged the first constructions of the headworks and washed away the first pipelines laid along the river. This was a serious setback, but the villagers decided to pursue their efforts nevertheless.

The WUA president recalled:

‘The then engineer of the water supply office inspired us to contribute our voluntary labour, showing us how to lay out the pipe line again. We succeeded in 1996.’

In 1997, the DWSS district office handed over management of the system to the WUA. The initial population benefiting from by the project was 3,868, according to the project completion report. *Lalpurja* - an ownership document in the form of a card - was given to the WUA leader at the time of system handover, as a gesture to declare officially management transfer from the authorities to the beneficiaries. DWSS officers guided users in the preparation of their WUA constitution, following stipulations in policy documents at that time, the Water Resources Act of 1992, and the Regulation of 1993.

The formal registration of the WUA with the District Water Resources Committee (DWRC)² at the District Development Committee (DDC) office also took place in 1997. Thereafter, repair and maintenance were the responsibility of the community, and water fee collection was put into practice to meet respective costs. Procedures for the collection of water fees were guided by the Water Tax Act 1966 as well as the Water Resources Regulation 1993.

¹The analysis of this section was also published in an article: Udas, P. B., Roth, D., & Zwarteveen, M. (2014). Informal privatisation of community taps: issues of access and equity. *Local Environment*, 1-18.

²The DWRC is responsible in the district for coordinating water used practice for different purposes, such as drinking water, irrigation, and conservation.

Like other water systems in the Baruwa River, the ADWS suffered from headworks problems due to floods in the river every year. So much so that it could not even operate for one year, because the headwork was washed away in the first year of its operation. At the same time, an ongoing lowering of the riverbed made it impossible for water to flow into the diversion canal as the system was a gravity-flow system. So, the first filter constructed with technical input from the district office was discarded. The WUA made another diversion more upstream as well as a new filtration tank. Yet, in the case of floods, dirty water used to get inside the tank. At the time of the field study, the system could not function from June to September.

5.1.2 System layout and an informal trend of privatization

Map 5.1 provides a layout of the ADWS below the reservoir. This supply system consisted of a filtration tank, a transmission line, a reservoir, and distribution networks. It had both communal standposts (community taps used by more than one household) and individual house connections (further referred to as individual or private taps, supplying water to one household).³ The reservoir had a capacity of 150 cubic meters and was initially designed for a population estimated for 2008, based on an estimated growth rate of 3.2%. The transmission line from the source to the reservoir was 2,680 metres and the distribution line length 11,280 metres.

The system supplied water to the following hamlets: Bhusune Asari, Laxmipur, Dhik-Tole, Behedwa, Bhatikharka, and Portaha (Figure 5.1). The upstream part of the distribution network ran through hilly terrain (supplying Bhusune Asari), while the downstream section covered flatter, 'plain' terrain (supplying the other five hamlets). The dark shading on Figure 5.1 shows the pipe layout at the time of system handover. The light shading shows the new connections since then, as documented at the time of study. The number refers to the tap numbers registered with the users' association. The cross line (X) indicates the taps that were no longer registered and officially closed by the association.

When the system was handed over there were sixty taps. Users of three taps located above the reservoir were not made direct-fee paying members of the WUA. These were the households who had agreed to remove a standing crop from their fields when transmission pipelines were laid down at the time of construction. In the negotiations with them about the use of their lands, the project committee had promised to provide them with filtered but untreated water free of cost, in exchange for this contribution. As the WUA president stated:

'The WUA rules for the payment of fees are not applicable to these tap owners'.

³(For details on terminology and design allowances see: WPP 2012).

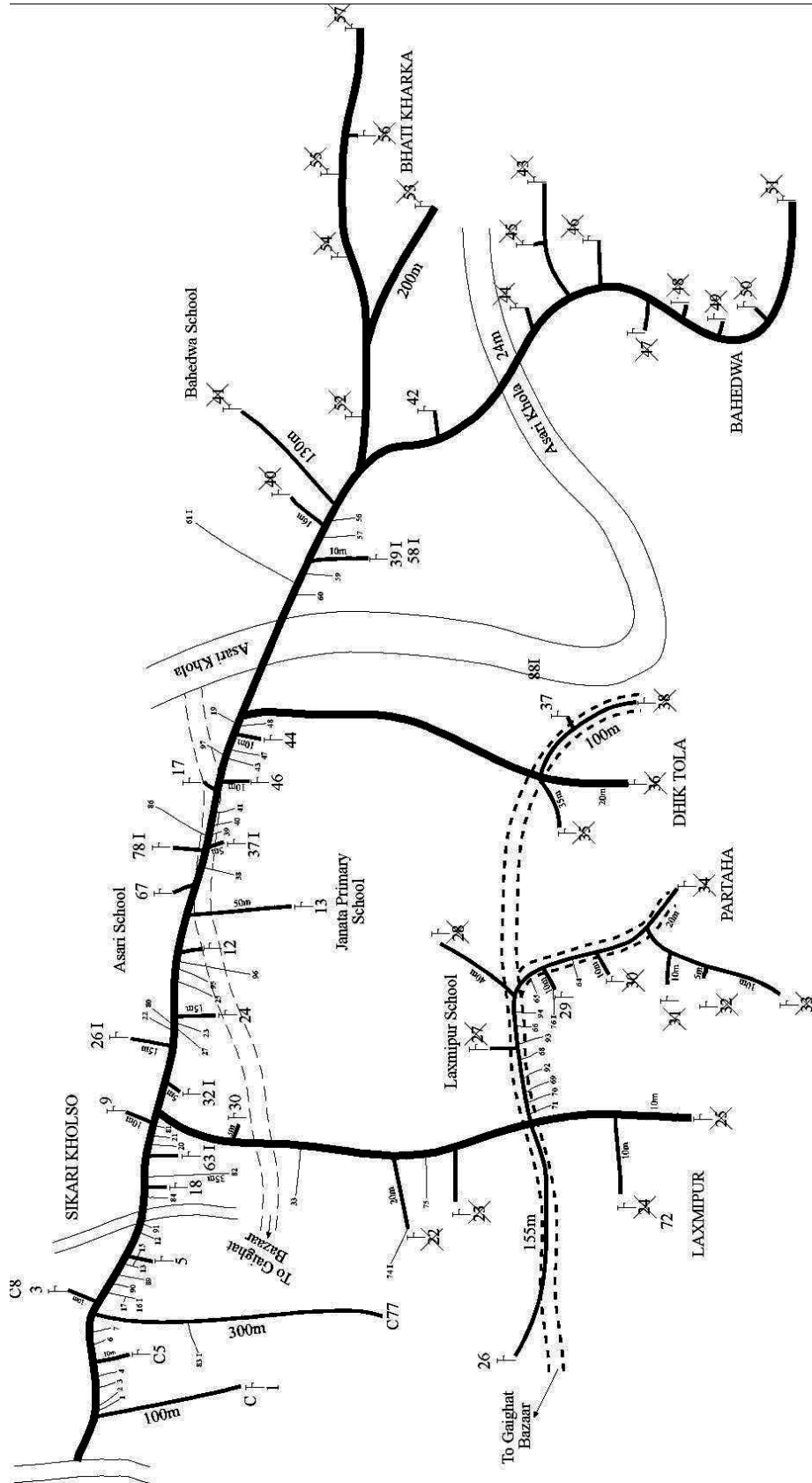


Figure 5.1. The layout of the Asari drinking water system below the reservoir

Source: Division Office, Udayapur, 2004 and WUA, 2005

Excluding these three taps, there were fifty-seven taps at the time of system construction, three of which were for the village schools. These schools were run by the community and received minimal support from the authorities. Hence, there were fifty-four community taps supplying water to more than one household.⁴

At the time of this study, these numbers had drastically changed: there were seventy-five taps, namely sixty-four private connections and eleven community taps.

A review of changes in the list of members registered with the WUA between 1997 and 2005 is presented in Table. 5.1. and Figure 5.2. They show the changes in tap types, and in the number of households benefiting in 1997 and 2005. The minus sign indicates the number of households that stopped being a member of the WUA in 2005.

Table 5.1 Changes in drinking water infrastructure and access entitlement

Village	1997				2005				Changes	
	T	I	C	HH	T	I	C	HH	Tap	HH
BhusuneAsari	19	1	18	125	51	42	9	85	+32	-40
Laxmipur/Portaha	13		13	153	17	15	2	24	+4	-129
Dhik-Tole	4		4	27	1	1	-	1	-3	-26
Bahedwa	18	2	16	94	6	6	-	6	-12	-88
Total	54	3	51	399	75	64	11	116	21	-283

Note: T- Number of taps, I- Individual taps, C- Community taps, HH- households with community or individual tap

The review indicates a drastic increase in individual tap connections, and an equally drastic reduction in community taps, suggesting that people who had initially been served by community taps had lost their direct access. By ‘direct access’ I mean access that is based on formal registration in the WUA; ‘informal’ access refers to access that is arranged outside of (or without) the WUA.

⁴The Nepal government had promoted the installation of community taps, one tap stand used by many households in rural water supply schemes, considering the ability of rural population to invest on the scheme (cost-benefit analysis) as well as to meet a national coverage goal of increasing number of people with access to safe drinking water.

Of the population who did get access to safe drinking water, more than half 56% access water through community taps including community tap of pipe water supply system and community tube wells, of which 43% have access through community taps of piped water supply scheme such as ADWS and the rest had community tube wells (DWSS 2011:22).

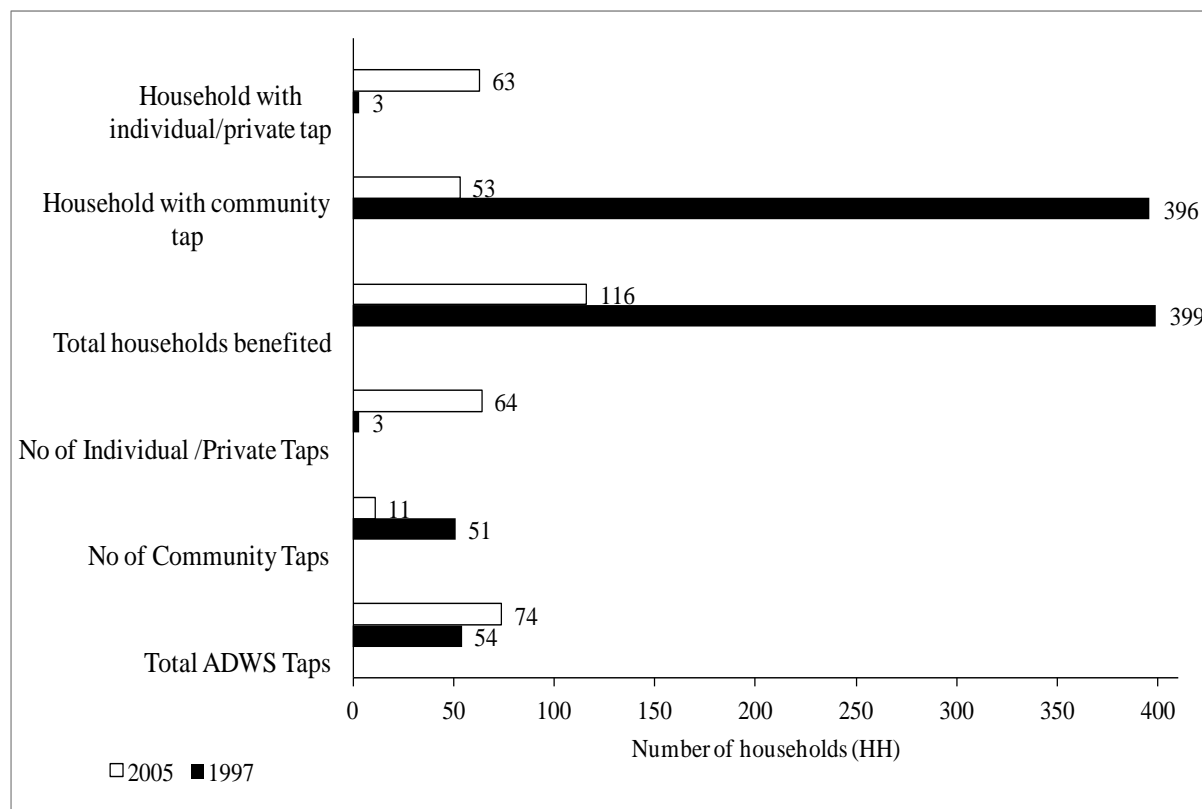


Figure 5.2 Taps, changes in tap types, and households benefiting in 1997 and 2005

Source: Field study, ADWS, 2005

Table 5.1 and Figure 5.2 indicate that 283 households lost their formal registration with the WUA. This means that, even if they were still able to collect water from the taps, they no longer had the formal right to do so. Some users still managed to access water through arrangements with the legal tap owner.

I further analyse the causes and implications of these changes for the (gender-based) equity of water distribution through a case study of one specific hamlet called Laxmipur. The analysis focuses on exploring the causes of the change in tap types (from community taps to individual or private taps), to understand how some households were able to ensure better access by installing individual taps, while others lost their formal access to community taps altogether.

In the following sections, I present my analysis of how the community taps have been turned into individual taps over the course of time, in a process of ‘informal privatization’.

5.1.3 Social organization and system management

The population served by the ADWS represented a diverse mix of caste groups, with a distinct dominance of *Tharu Chaudhari* in Laxmipur/ Portaha, *Brahmin-Chhetri* in Bhusune Asari, and a mixed community of *Chhetri*, *Rai*, *Tharu Chaudhari*, and *Danuwar* in the hamlets of Behedwa and Bhatikharka. The *Chaudhari* and *Danuwar* are ethnic groups whose forefathers lived in the area. The *Brahmin Chhetri* and *Rai* groups are originally migrants,

who have been living in the village at the most for three generations. Most of the *Brahmin Chhetri* in Asari had off-farm incomes through working for the government. Some men from hill migrant groups of *Tibeto-Burman* origin, such as the *Rai* and *Magar*, were working in the national, Indian, or British army. A handful of *Chaudhari Tharu* and *Danuwar* had off-farm jobs, the rest were farmers.

Caste diversity roughly correlated with economic (class) diversity. At the time of the field study, 33% of the villagers were marginal farmers who worked as tenants, mostly *Chaudhari* and *Danuwar*. Another 46% were middle class families who neither rented out land or took land on rent. The remaining 21% were wealthy farmers who rented out their lands to tenants and sharecroppers.

As noted, before handover of the system, the district office had facilitated the formation of the WUA by providing a draft constitution. Membership of the WUA was based on tap ownership. For a community tap, a representative from the zone served by the tap was a member in the WUA. Often, a member was selected on consensus basis rather than election. All others served by these community taps were registered as beneficiaries of the system in the WUA records, and had no voting rights.

The first president was a person from Bhusune Asari from the *Brahmin Chhetri* caste. He had the highest level of education in the village at that time. The president in 2005 was a *Chaudhari*, and used to be the treasurer in 1997. Only men were representatives in the first committee.

After the formation of the committee, the WUA was formally registered with the DWRC at district level according to the Water Resources Act 1992 and formed according to Water Resources Regulation 1993. The WUA could apply to the DWRC for financial and technical support when needed. For a WUA to maintain its legal status, its membership had to be renewed every year by paying about NRs 500 (in 2005) to the authorities.

Membership also required a financial audit. In 2005, membership was not renewed.

The president explained:

“I am too busy to work on a financial audit of the association. As there is no certainty about receiving funds from the authorities, renewal will only cost us more money, while even now we already lack money needed to maintain the system.”

General assembly meetings of the association were held very irregularly, which meant that decisions of the association were made only by a few people, including the president and a few committee members. In fact, most WUA matters were decided almost singlehandedly by him and villagers accepted it, as they respected and trusted him for his knowledge on procedures to deal with government agencies. He had been president of the system since 2000, when the second committee was formed. They particularly appreciated his efforts in carrying pipes and performing plumbing activities on his own to maintain the system.

He carried out his duties as the WUA president from his own house, even though there was a small WUA office. Also, activities such as fee collection and complaints were directly made to him at his house.

He commented:

'The location of the office building is far. The WUA is not able to maintain staff to be in the office. So I volunteer my time and receive complaints at home.'

At the time of system construction, the cost of installing a tap was NRs 500 plus the additional cost of the pipe to be laid from the distribution network to a standpost. Households that were not able to afford this, could join together and apply for a community tap, thereby sharing the same expenses. Since many could not afford to install an individual tap, fifty-one community taps were installed, providing water to 396 households in 1997.

There were only three individual taps: one was in Bhusune Asari and belonged to the first WUA president; the other two were in Behedwa and belonged to female-headed households, where the spouses were working abroad.

After installation of the tap, NRs 50 per month had to be paid for every tap to continue membership. In 2005, for new connections, households had to pay NRs 700 as an initial deposit for the cost of the pipeline from the nearest connection point to the tap stand as well as a regular monthly charge of NRs 50 to maintain the tap.

For the first three years after the handover, the committee received financial support from the authorities to pay the salary of a peon and a plumber. Afterwards, the WUA became responsible to pay these staff with the fees collected from the beneficiaries. Since the cost of repairs was high, the WUA continued to hire only a peon from 2003 onward; the plumber left for foreign employment. The WUA president himself did plumbing work then.

5.1.4 Changes in access by hamlets

A detailed study of different hamlets of ADWS shows different reasons for a user either losing or gaining access to a drinking water tap.

Water access at Bhusune Asari

In the hamlet of Bhusune Asari, only nine out of the initial eighteen community taps were still in use seven years after construction of the system. The number of individual taps, on the other hand, increased from one to forty-two. Compared to the other hamlets, this one still had the highest number of community taps installed as well as the highest number of individual taps, since system construction.

The households still using community taps contained poor families of tenants and landless labourers. An example was that of a widow with four children.

The mother told:

'Apart from this water we do not have any source of drinking water. I cannot afford to have my private connection. So I pay for the water and spend time walking to the community tap. If I had my own connection, the time spend on collecting water would be less than it is now.'

Another example concerned a male member using a community tap, who was a tenant and had nine children:

'When the system did not function due to flooding we went to the river, but this is hard and the water is mucky.'

Most households that withdrew from the community taps and made an individual connection belonged to the *Brahmin Chhetri* community. Many of this high-caste community were economically better off, often because of off-farm jobs of some household members. Grown-up children in many of these households earned money that contributed to the family income. Hence, these households could afford making the shift from a community tap to an individual connection.

Two-thirds of the forty households no longer registered with the WUA accessed water through taps in other households if the community taps were located far away. The remaining collected water from a small unit originating from a nearby spring.

Water access at Dhik-Tole

The four community taps that used to supply water to the 27 households in this hamlet had disappeared; one individual tap had been placed instead. The reason for this was the availability of groundwater sources, which could be accessed through tube wells by anyone who could afford this option. Because the ADWS did not function smoothly throughout the year, people preferred to access water through tube wells.

One such case, a *Rai* woman whose husband used to serve in the army, narrated:

'I had difficulties collecting water when the system did not function well due to floods in the river. The WUA did not stop charging the water fee, even when there was no water. We know it is used for repairs, but it is expensive and we're not sure that we receive water. Installing a tube well instead became cheaper in the long run. Since I could afford it, I installed a tube well. However, after installing the tube well, I keep receiving requests from my neighbours to use water from it. After I raised my concern about this, we decided that everyone who uses water from my tube well will also contribute to its repair if it breaks down.'

However, not every household was able to make the shift from a community tap to ownership of a private tube well. A woman who used to take water from a community tap expressed her plight:

'I don't know anything about the rules, but it was easier for me to collect water from the community tap.'

So, in addition to not having the financial means to install a tube well, she also lamented her lack of knowledge about WUA affairs.

Water access at Behedwa

Behedwa, a hamlet at the tail-end of the system, lost all sixteen initial community taps it used to have at the time of system handover. Altogether ninety-four households initially benefited from a total of eighteen taps, including two private taps. In the 2005 WUA records, only six households were still registered as beneficiaries. When I visited the households the taps of which had been closed, I found that most of the community taps had been represented by members of marginal households of the *Chaudhari* caste. The taps were closed by the WUA because member-users of the community tap had failed to pay the monthly fee.

After the taps had been closed, the households started collecting water from an old well. For some households this well was located at a distance of 10 to 15 minutes walking. A girl who used to collect water from a community tap recalled:

'Sometimes in the dry season, we used to stand in line to collect water from the community tap. However, before it was our turn, the tap had run dry. This was caused by the fact that users located at the head end of the Asari system used drinking water even for growing rice seedlings in the kitchen garden. We complained about this, and the WUA announced that drinking water should not be used in the rice nurseries. However, now the WUA has closed our tap, saying that we did not pay the fee, so we are forced to look for an alternative. It was easier to go to the community tap, even though the supply was irregular. When the tap was flowing I had the advantage of not being too far away. However, we could not arrange payment because of various problems among us.'

Water access at Laxmipur

In Portaha and Laxmipur, two hamlets close to each other, there were thirteen community taps serving 153 households at the time of construction. Since these were crowded hamlets of *Chaudhari Tharu* households, the number of households using a community tap was highest. In addition, most households were marginal farmers, who tried to maximize the benefit they could draw from one tap while paying as little money as possible. On average, one community tap was used by twelve households. In 2005, there were only two community taps left and there were fifteen private taps. Of the 153 registered with the WUA initially, 129 had lost their registration in 2005.

For further study, I looked into Laxmipur alone to understand the reasons for these changes. Figure 5.3 presents an overview of the drinking water supply network there. On the map, 'P' next to the sign of a tap or a tube well means these were privately owned, whereas 'C' indicates community taps and tube wells. At the time of the research, there were seventy-two households in this hamlet. There were 14 tube wells, 8 taps from the ADWS, and 3 open

wells. The arrows leading from a house to the water source indicate the distance travelled by a person to collect water for the family. It shows that some people preferred travelling a longer distance to a community tap, rather than collecting water from a neighbour's house closer by. At the same time, some households had indicated that they collected water from multiple places - a community source as well as from neighbours with private water sources. I have analysed this further to gain a better insight into the social and gender dynamics of accessing water.

One of the community taps that had been closed used to supply to ten households. At the time of the study, three former users of this tap had installed private tube wells. The other ex-users also took water from these tube wells. The map indicates how some households located far from a continuing community tap collected water from a neighbour with an individual tap or tube well, whereas others continued using the community tap. Why did some households continue using the community tap, even though located at a distance, instead of using their nearby neighbour's tap or tube well?

The decision to collect water from a community tap or from a tap owned by neighbours was also influenced by the positioning of users in social networks and relations of dependency. This became clear from an interview with a woman from a landless household, who collected water from a neighbour.

This woman, (in house number 13 in Figure 5.3) explained that going next-door to the tap made her feel obliged to her neighbour every time she collected water:

'I feel that I have to say to my neighbour: "I do not have my own tube well, that is why I come to you. Please give me some water".'

When she went to a community tap her feeling was different:

'Then I felt that the tap belongs to all of us equally. It is from Sarkar (the authorities).'

Because of this different perception her self-esteem was higher when she was using a community tap compared to using the private source of a neighbour. Whenever she sensed that the tap owner, especially the lady of the house, was unhappy because of her using the tap, she would go to a well located 15 minutes away. Sometimes she also compensated for the favour by helping the women in the house with chores.

Another woman who did not own a tap said that her husband blamed her for her inability to work with others, when she expressed her problem with going to their neighbours' tap. This resonated with the experiences of some other women belonging to households without private taps or tube wells: they felt that their problems to access water were not always taken seriously by their husbands.

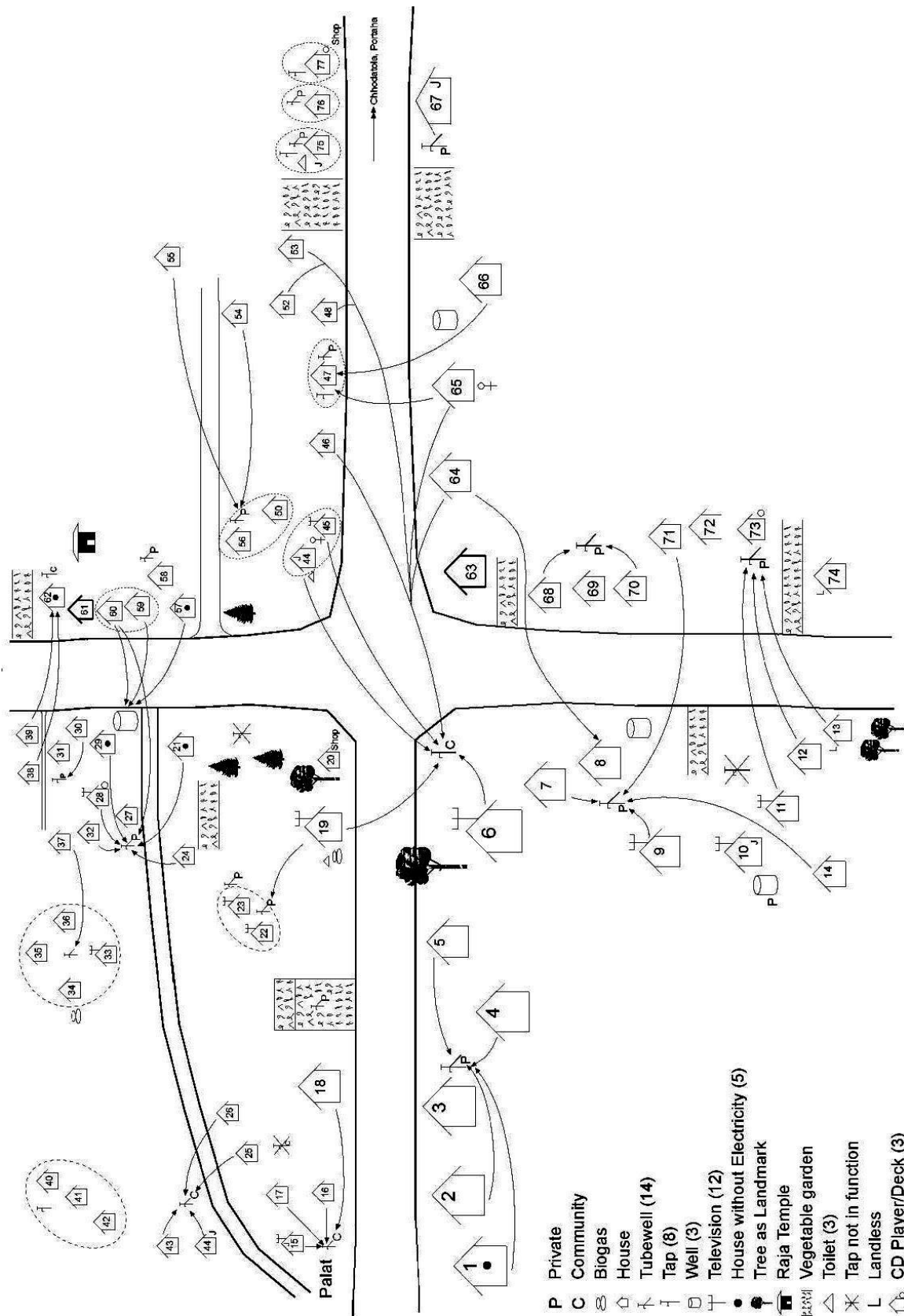


Figure 5.3 Map of Laxmipur Tole (not to scale)

Source: Field study 2005

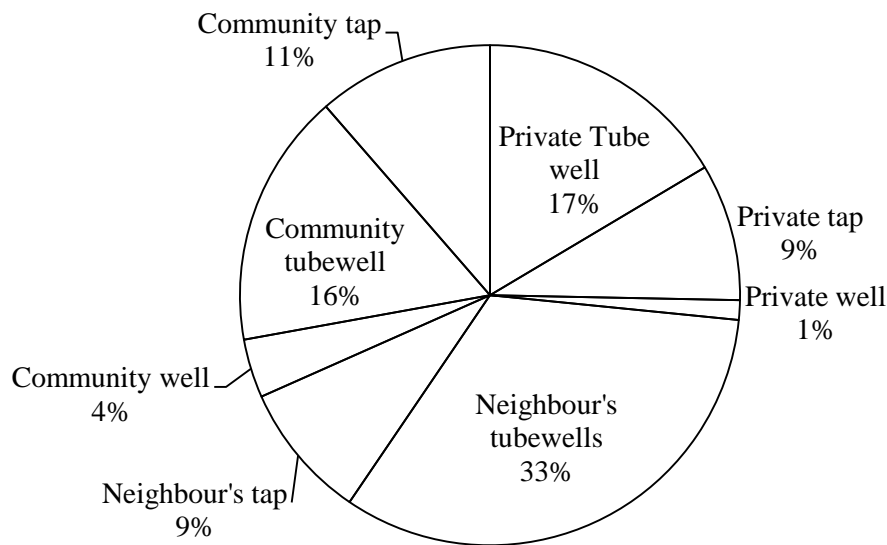


Figure 5.4 Analysis of water access at Laxmipur

Source: Field study (2004-2005) n=100%

Some men explained that they preferred their wives to collect water from their neighbours, as they were not able to pay for water. In one household, the man earned money by working as a labourer to support five family members. The other source of income for his family was growing crops on a piece of rented land. As the total household income from these activities was too low, he tried to maximize savings in all possible ways, including saving on the cost of drinking water.

He said:

'I try to save money as much as possible so that I can feed my children. That is why I ask my wife to manage with the neighbours.'

Some other women succeeded in persuading their husbands to have a private tap installed next to their houses.

The households that had initially been served by a community tap said they did not know how they could have influenced the WUA and its decision to close the tap. Though they were not happy when it happened, they also felt there was no way to influence this WUA decision.

According to one of the respondents:

Their feeling of powerlessness was linked to their tenancy status, combined with their lack of membership or representation in the WUA.

When I discussed the closing of community taps with the WUA president, he explained:

'The monthly water fees from all the taps in the system are the only regular source of income for repair and maintenance. Hence, we have to enforce the rule of fee payment

strictly. If we allow some users to pay less or not at all because of their economic situation, all others will start requesting the same. Having more taps will yield more income that can support maintenance costs.'

In Laxmipur, those who had installed individual taps, were the wealthier and politically more influential households, such as that of the then president as well as that of his brother, who had an off-farm income. More well-to do households also included the migrants from the hills. When they migrated a generation ago, they came with cash with which they bought land and installed individual taps.

In contrast, those households that had lost their registration were the economically weaker ones. Characteristically, these households usually had received no formal education and almost all were illiterate.

5.1.5 Who had lost? Who had retained formal access?

A detailed caste and class based analysis of households that could continue their WUA membership, shows that the high-caste *Brahmin Chhetri* had been able to retain membership and have private taps. A majority of the *Chaudhari Tharu*, who had been using community taps, had lost their membership from the WUA (Figure 5.5).

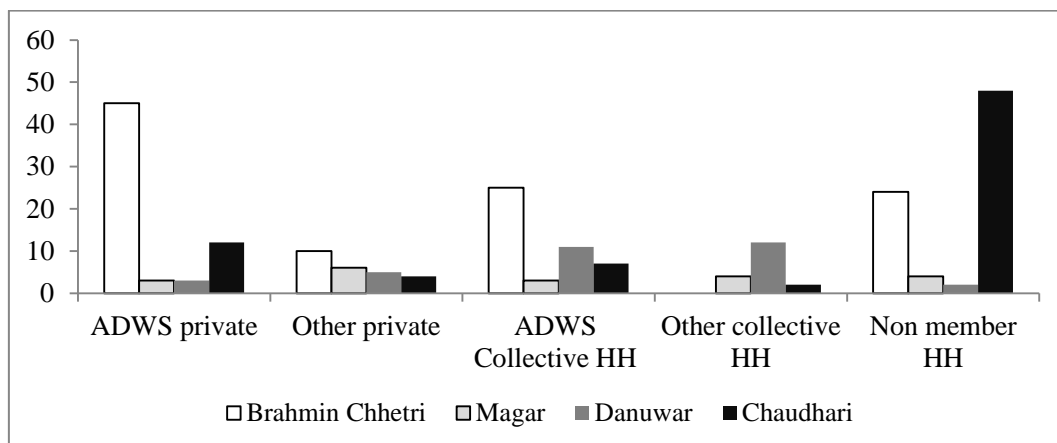


Figure 5.5 Caste analysis of households and mode of water access in 2005 in all hamlets

Source: Field study 2004-2005, (n= 230)

Similarly, an analysis based on landownership and land-use pattern reveals that households with large land-holdings and renting out land had been able to install private taps (Figure 5.6). These figures clearly show that the ability to install and register for a private tap was directly related to a household's capacity to invest in a tap and keep paying the necessary fees.

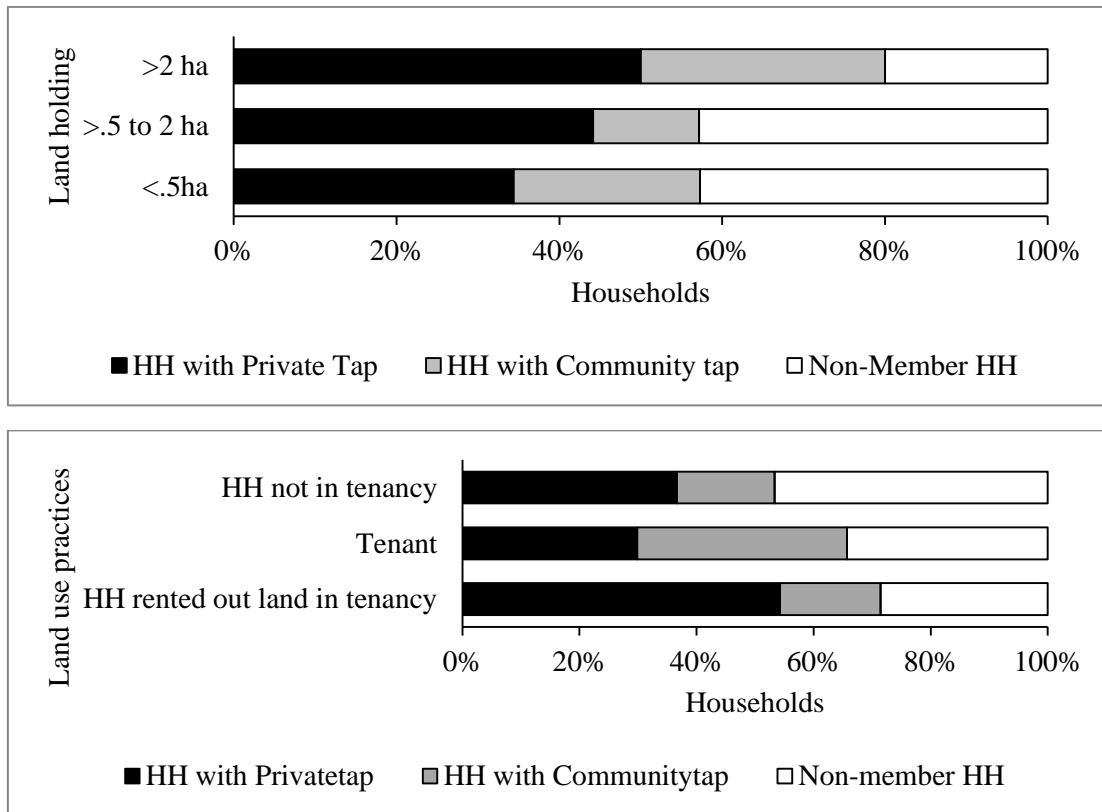


Figure 5.6 Water access according to land-holding pattern and land-use practice

Source: Field study (2004-2005), n= 183

In sum, the analysis yields four reasons why some users had lost their access to taps, while others succeeded in obtaining a private connection: (1) the WUA had an interest in promoting individual taps, as it needed to collect as much membership fees as possible to be able to finance maintenance and operation of the system; (2) not all users were equally able to pay the water fee; (3) there were alternative sources of water to the tap; and (4) not all users were equally able to influence WUA decisions to close a tap.

The WUA and promotion of individual taps

In decisions about closing a tap or getting a new connection, the opinion of the WUA president prevailed, since any request related to taps was dealt with by him. The plumbing tools that were only available from the WUA in the village were also in his hands. Although plumbing activities had been handled by a plumber initially, the president himself took over this work, after the WUA had decided it could no longer pay that man’s salary.

As a consequence, on the one hand the president gained respect from many users when he was seen working in the heat carrying a load of pipes, connecting the pipes or negotiating with upstream users to share water at the source during dry periods.

According to a villager;

'Thanks to our president we are able to receive water. Had he not been there, all taps would have dried up by now'.

On the other hand, the power to manage the system became centralized and concentrated in his hands, with him almost singlehandedly deciding whether to close or open a tap.

These decisions were principally motivated by the financial need of system maintenance, because the system did not receive any public support. That meant, the president could not deny any request for an individual connection; rather, he even promoted such requests. At the same time, if users were not able to pay for community tap water, he disconnected the tap rather than spending efforts to improve solidarity between users.

So, on one side the growing number of individual taps had increased the total revenue collection for the WUA, even more so because the charge for new tap connection had increased from NRs 550 to NRs 700. But the flip side was that many former community-tap users had lost their WUA membership and formal access to water from the system. In the process, the WUA president had acquired more powers and started implementing his own ideas. It was evident that in the recent past, no WUA meetings had been held. Because many WUA members were happy with their individual tap connections, they never questioned the authority of the president. So, over the years, solidarity with those who could not pay for an individual connection had become less important than the financial sustainability of the system.

People's ability to pay

Community tap users were the socio-economically poor. Of the 48 community tap users surveyed, 21% were landless, 48% were tenants, and another 31% were subsistence farmers, who neither rented out land nor took up land on tenancy.

The installation of new taps in Asari indicated that people's ability to pay was the main determinant in the choice to do so. Some households, that used to receive water from community taps, decided to have an individual tap when they were able to pay. In contrast, the poor households that were unable to pay even lost their formal access to water, once the group using the tap could no longer mobilize the resources to pay for it.

Availability of alternative water sources

In the hamlets located in the 'plains', where alternative sources like ground water were available, households opted for tube wells if supply in the taps was irregular and unreliable. However, those using tube wells often reported to be uncertain about the quality of ground water.

One user, who was a school teacher and was able to afford a connection to a ADWS private tap as well as a private tube well, said:

'We use tap water rather than water from the tube well for drinking. At least the tap water is chlorinated and therefore we know it is safe. But I am not sure about the quality and safety of the ground water.'

Hence, despite their ability to make choices about the preferred source of water, some wealthy households secured their drinking water access by investing in both a tube well and an individual tap connection. Some families opted for a tube well connection only.

In a complex interplay of socio-technical and institutional factors, many households were left with neither a tube well nor their own tap connection to access water. The wealthy ones who had possibilities of installing a tube well opted for an alternative source rather than making a collective effort to improve the ADWS supply.

Participation in the WUA and ability to influence WUA decisions

The level of awareness about the WUA, its activities, and its committee members hugely varied among users. Interviews with 118 users of the ADWS revealed that many had only a limited knowledge of the WUA. For instance, 71% of the respondents replied that they knew about the existence of the WUA and its members, but all of them knew the president, but many did not know the others. The remaining 29% of households, using (19) community taps, did not know any WUA member.

The lack of awareness of community tap users about the WUA was the result of its rule that community taps were to be represented by only one user. So they lacked possibilities to participate in WUA meetings, which is why their knowledge about the system and its management was less compared to that of private tap owners. This hampered collective thinking and also collective action to maintain the tap, and also prevented those users from having a voice in decision making.

In conclusion, the ADWS case shows that people's ability to pay for water determined users' ability to retain WUA membership. Unlike the irrigation systems discussed in chapter 4, the closed piped drinking water supply systems made it possible for the WUA leader to exclude some users from accessing water. Though the WUA leaders of the BIS and BAIS located in the area were some of the same people as those of the ADWS, the irrigation WUAs were much less concerned with imposing rules on water distribution and access. In contrast, the same people in the ADWS were active in disconnecting the taps of those failing to pay fees, most of which were community taps. The WUA instead encouraged individual tap installations for those who could pay the cost. The comparison illustrates how technological choices (piped or open canal systems) co-shape management and water distribution modalities.

5.2 The Gaighat Drinking Water System (GDWS)

The district office of the DWSS constructed the GDWS in 1993, on the right bank of the Baruwa River. The system was managed by a users' association after the authorities handed over the system in 1997.

The system supplied water to Wards 1, 2, and 17 of Triyuga Municipality through 437 taps, of which 45 were community taps; the remaining 392 were individual or private taps.

At the time of the field study in 2005, the Triyuga Small Town Water Supply Project was underway since 2000, to upgrade the capacity of the GDWS. The project cost was NRs 81 million. It was meant to increase the capacity of the reservoir to 754 cubic meters from the existing 192 cubic meters, to allow for 101 community taps and 2260 individual taps in the design year of 2005. The project aimed to extend supply to Ward 3 as well as current supplies in Wards 1, 2, and 17, to cover 529 households and a population of 15462 (ITECO 2003). This way, the number of community taps would be doubled and individual connections would be increased almost six-fold.

In 2005, community mobilization was ongoing, but system infrastructure improvement had not yet started due to delay in mobilizing funds and resources from users, which was required as part of a cost-sharing mechanism.

This mechanism was the first of its kind in the country. It called for 'the community' to share fifty per cent of the project costs through three types of payments: (1) users were to deposit 5% of the cost in cash before the start of the project, (2) 15% of the cost was a users' contribution, to be made either in cash or in kind during the project, and (3) the remaining 30% was to repay a loan from the Town Development Fund (TDF) to the users' association. This loan had to be repaid at an 8% annual interest rate within 12 to 15 years.

At the time of the field study, the users' association was struggling to collect the 5% upfront cash from users, which had amounted to NRs 3.7 million. The project completion report of the ADB in 2010 noted that the project was completed but provided an intermittent flow of water. Also, the users' association was not able to pay the interest to the TDF until 2010 (ADB 2010b).

5.2.1 System details

The GDWS is the most upstream water system using water from the Baruwa River. It consists of a diversion channel, a filtration unit, a transmission pipeline, a reservoir, and supply networks. Like the ADWS, the intake of the GDWS is prone to flood damage. The WUA had already abandoned one filtration unit and built a new one upstream at the time of the field study.

A national newspaper, *The Rising Nepal*, reported the damage caused to the system in 2011, indicating that the system continuously suffered from river floods:

'Drinking water shortage hits Gaighat

Water supply to different places including ward numbers 1 and 2 of Triyuga municipality in Udayapur district has been cut off after a landslide damaged the water supply project. According to Binod Kumar Basnet, a member of the Drinking Water Consumers' Committee, the landslide occurred at Babari where the drinking water project is located, and buried the reservoir leading to the obstruction of water supply. As a result, the locals and different government offices at Gaighat bazaar and Bokse are facing a water crisis.'

(The Rising Nepal August 23, 2011)

5.2.2 Social organization and management

At the time of the field study in 2004/05, the system supplied water to Wards 1, 2, and 17 (for more details see Figure 3.2 in Chapter 3). Ward 1 is situated in the upstream area and was dominated by *Chhetri-Basnet* migrants from Khotang district in the North (for details on migration from Khotang to Gaighat, see Adhikari & Hobley 2011:31). Ward 2 is the trade centre Gaighat, located between the northern hills and the southern Terai and populated with a mixed caste group, most of them hill migrants. Ward 17 is located on the western side of Ward 1 and was dominated by *Chhetri, Chaudhari-Tharu, Mushar, Rai, and Brahmin* caste groups. According to municipal records, the number of households in Wards 1, 2, and 17 were respectively 915, 820, and 287.

Those registered as members of the WUA were either individual tap owners or representatives of users collectively using a community tap. Individual membership was not attached to landownership, as in irrigation systems. Hence, any member of a family could be registered as a member for the tap connection. During the study period, the total number of WUA members was 437; 45 of them were community tap users, and 108 registered members were women.

Apparently then, the GDWS showed relatively more female members than the ADWS, as I explain in the following.

The first users' committee was formed in 1994. It had completely taken over management of the system in 1997, after the authorities had handed it over to the committee. Its office was located in Ward number 1. It employed eight staff: an overseer, an accountant, a mason, a meter reader, two peons, an intake supervisor, and a pipeline supervisor. Also, the WUA secretary worked at the office full-time as the committee representative, and was paid by the WUA. The WUA had a total income of NRs 434,550, of which it paid NRs 422,938 for staff salaries, meetings, and material purchased for system maintenance in 2000.

At the time of the study, the committee president was a man from the elite caste family (Basnet), which had always been so. The committee in 2005 had two women members and a man from Nayabasti, a poor community representing small landholders and peasants (for details on the social organization and land struggle in the study area about Nayabasti, see section 3.5 in chapter 3).

5.2.3 Gender dimensions of tap registration

Excluding the 32 taps connected to government offices, those registered in women's names formed 26.6% of the total. Compared to the irrigation system located in the same area, where women members were only 6.25% in the UBIS, this number is high.

After a detailed study of households having women listed as members in the users' organization, I found that the majority of these women members were from households having more than one tap. According to the WUA rule, any household with one tap could request for another (with a T-connection to the same pipe line) by paying an extra charge and registering the tap in the name of another household member. Households who did this, often registered one tap in the name of the husband and another in the name of the wife. This explains why there were more women members in the GDWS, even though the dominant practice of membership registered in men's names also applied there. Irrespective of formal membership, mostly men represented a household at WUA meetings.

A female member explained:

'Often he (my husband) attends the meetings and I look after the household chores.'

The involvement of female members in WUA activities was thus limited to ensuring their entitlement to the tap for household purposes, which also included regular payment of the fee for the tap. Their husbands were involved in WUA meetings, and water-related politics in the association.

5.2.4 The issue of payment

There were large socio-economic divides among the users of the GDWS. The old migrants from the *Chhetri* caste, mostly *Basnet* were wealthy, with large landholdings. In contrast, the *Mushar* and *Damai*, basically Dalits, were landless. The WUA decision to collect NRs 2000 per tap to meet the cost of the STDWSS project, therefore, had very different effects on different households. The project did identify the ultra-poor and had made special provisions for them. Still, the poor who took a loan to pay the amount from local money lenders, faced difficulties in raising the money.

A case in point is that of a woman aged in her forties. I met her when she had a jute rope tied around her head to carry a bamboo basket (*doko*) to collect grass for her goats. She was listening in to a discussion I was having with other women about the taps. She asked: 'Is it about drinking water?' She explained that she was eager to know when a drinking water tap would be installed next to her home, since she had already deposited her contribution of NRs 2000 to the WUA office two years ago. To be able to pay this, she had borrowed NRs 1500 at the rate of 5% monthly interest. At the time of the interview she had paid NRs 1800 as interest.

She had yet to pay the principal amount. She was living by herself, since her husband had left to work abroad to earn for the family. She had hardly heard from her husband and just

assumed he would be fine. She could not attend any of the WUA meetings, as she was busy taking care of the children and animals at home. She had taken the loan after she had heard from her neighbour that anyone who failed to deposit this amount would be denied a tap in the future. At the time of the interview, she was getting water from a community tap. She mentioned the names of five other families who had taken a loan to be able to pay their contributions.

She said wistfully:

'If I had a tap flowing in my home, I could save time to work and hopefully I would then be able to pay back the loan. As it is, water does not flow, nor does the money lender stop asking for interest every month.'

5.2.5 WUA leadership and participation

In the early 19th Century, the *Basnet* family - who were landlords already then - had been authorized by the state to collect taxes from people living in the area on behalf of the state treasury. Though this feudal system had ended with democracy in 1950, the power and influence of the *Basnets* was still prevalent at the time of study, in village politics and in GDWS management among others. For instance, the GDWS committee had always been headed by a male member of the *Basnet* family. Someone of the *Basnet* brothers had continuously been involved in the committee. At the time of research, a *Basnet* brother was secretary of the GDWS (further referred to as Mr S). He was also the secretary of the Upper Baruwa Irrigation system in the study area. Most users thought that he was still the president of the water system, as he had once been. Mr S used to be a government employee at the District Drinking Water Office. There was a rumour that he had had to quit because of mismanagement of office funds. After the GDWS was handed over to users in 1997, he became the WUA president until 2003. Among the members, the powerful *Basnet* brothers decided to promote him as the president, considering his earlier experience of working at the Drinking Water Office. After he had lost the government job, his brothers felt he could work full-time at the WUA office as a committee representative and be paid in the bargain.

A brother said:

"U aru kai ma Pani chaina, teslaile Diu bhanera hamile president diau (He was not holding positions anywhere, so we decided to give him the position of president)".

In 2003, the WUA did not succeed in collecting cash from beneficiaries in time, which was the requirement for the STDWSS project to go ahead. If they were unable to deposit the money, it could cause the authorities to cancel the project of upgrading the system.

A *Basnet* brother proposed giving a loan to the WUA, so that the work could begin. The other brothers then decided he should become the president, also to ensure that this loan would be paid back. They also hoped that the 'clean' image of this brother, who had been living most of the time in the capital, would increase the beneficiaries' confidence in the success of the

project, which in turn would improve fee collection. The brothers suspected that the water users no longer trusted Mr Secretary, due to his involvement in the rehabilitation of the Upper Baruwa Irrigation System that did not succeed as planned. Therefore, the earlier president was made secretary.

Though the committee was to be formed by general members, it is clear that the influential elite brothers dominated the decisions about the composition of the committee, as well as other decisions of the WUA. In this context, not only the voices of female members, but also those of most men went unheard. Instead of going through the WUA, people who wanted to raise concerns and get their voice heard were, found to be using social networks.

5.2.6 Access, power, and participation

In general, WUA matters were embedded and formed part of broader social relations of dependency and power within the village. Two examples illustrate this:

A woman (Mrs S), aged 47, lived in Ward 17 with her seven children, aged 2 to 23, and her husband. According to her, she had started taking the lead in family affairs after it became clear that her husband could not bargain with others to benefit the family. Livelihood of the family depended on the productivity of the five *Kathas* of land they owned. They were also renting one *Bigha* of land belonging to a Basnet brother, in a share-cropping arrangement.

As the family could not pay the cost of an individual tap connection, they got water by sharing a neighbour's (Mr N) tap, paying Rs 25 every month. This was easier than using the community tap, which was far away. When relations between the two families soured, Mrs S decided it was time to install their own tap. She went to the WUA secretary and explained her plight. The secretary tried to find a solution and decided that the WUA could give her a connection from the line nearest to the community tap if she paid the cost of NRs 350. She shared the cost with her cousin next-door and had a new connection installed.

After a few months, there was an election for the presidential post of the community-managed school committee in the village. Mr N contested in the election. Mrs S voted for his opponent. One evening, Mr N accused her of having voted for this opponent in return for money. She tried to argue that she had paid for his water when she used his tap and argued she never sold support for money. Before she could complete her sentence, his strong foot kicked her from behind. She fell down on the ground.

Mrs S thought that her neighbour could only hit her in public because he considered her family poor and weak. She complained to the District Administration Office, where the neighbour apologized for his misbehaviour. She said:

“If I would not have had my own tap, I would have never dared to complain about him.”

Not everyone was able to voice their concerns to the WUA as directly as Mrs. S in her case. Instead, many were found approaching another lady - Mrs D – to help them in their dealings with the WUA as illustrated here:

Mrs. D, aged 54, was de-facto head of a family. She was a committee member of the Upper Baruwa irrigation system and a sub-committee⁵ member of the drinking water system. Mrs D was a migrant from Bhutar VDC, located north-west of Gaighat. She had married her brother-in-law after the death of her sister, who had left behind a two-year old son. Her husband was a landlord. Unfortunately, her husband went to stay with another woman after a daughter was born to her. Hence, she moved to Gaighat with the two children. The son from her sister migrated to the United States under the diversity visa scheme and the daughter lived in Kathmandu after her marriage.

Mrs. D owned 40 *Kathas* of land, of which 30 was rented out. She lived alone. Her livelihood depended on selling crops and lending money to villagers. She also managed a petty shop at home. Her economic status was sound. She was also a member of two women's groups - a committee to make a road inside the village and a community forest group.

The day I went to visit her, she was talking to a man over her telephone, which was the only telephone in the locality:

She shouted:

'Brother-in-law! Get ready to bring a lunch for me in jail. I have not received drinking water for the last 15 days. I am going to cut the pipe.'

Her satiric request was made to the WUA committee member from the *Basnet* family, with whom she had family ties. After she put down the phone, her daughter who was visiting her expressed her unhappiness at her rude talk over the phone.

Mrs D shouted at her:

'You don't know how to survive in the village. Don't teach me how to talk to people. Phakaune Thagma Phakaunu parao, chichaune thagma chichaunu paryo - Wherever there is a need to speak politely I will speak politely, wherever there is a need to shout, I will shout.'

After a while, a man visited her asking whether she could join him at the WUA office to help with a request. She often received such requests from users, who were less well connected, also because of her reputation of being outspoken and capable of arguing with office bearers.

Not all liked her though. Some users of community taps remembered her misbehaving, when they could not pay the water fees.

⁵When the GDWS was in the process of upgrading to a small-town drinking water project, sub-committees under executive committees were formed to carry out different works, such as money collection from each household and community mobilization for voluntary contribution.

A woman recalled:

'She put mud in my drinking water pot when I was filling my pot in the tap'.

A male water user remarked:

'She does not have the heart of a woman.'

Mrs D thus occupied an interesting intermediary position between the WUA office and the water users, with both making use of her authority and straightforwardness.

The drinking water committee gave her the authority to collect water fees from the users in her locality and to collect the initial deposits to be made for the new Small-Town Drinking Water Programme. Some villagers in her locality felt obliged to her and depended on her, among others, because they needed her phone connection for urgent calls from family members living elsewhere. It was a familiar sight to see Mrs D shouting to call her neighbours to receive a phone call that had come through her telephone. She explained that she enjoyed working for others, because this way she gained respect and influence.

So, functioning of the GDWS WUA was inseparably mixed with more general aspects of dependency and power that characterized community relations, with a clear dominance of some elite groups. The selection of committee members was based on nepotism instead of a democratic process of election by all the members of the WUA. In addition, while the case showed relatively high numbers of women members (especially when compared to irrigation systems in the same location), this was not because of women's interest to participate in the GDWS WUA. Rather, it was the result of the possibility to install more than one tap per household in different users' names.

As in the ADWS, someone's access to drinking water was directly correlated to one's ability to pay water fees. Sometimes, when the water was scarce, access to it depended on negotiations and power struggle with one's neighbours.

5.3 Conclusion

This chapter set out to answer the third research question of this thesis: How does formal participation in WUAs translate into women's voices in water decision-making and their access to water at community and household levels? So, the chapter aimed to understand the effectiveness of improving the participation of female users in WUAs as a policy tool to increase gender equity in water distribution. The two case studies provided illustrations of the linkages between participation, voice, and access to water. The first case of the ADWS illustrated how community taps used by many households, and installed with government support with the aim to supply a larger population with safe drinking water, gradually had turned into individual or private taps serving just a few households, over time excluding more and more economically poor households from a formal access to tap water. The second case of the GDWS, a system progressing to become an urban water supply system with advanced

technology, illustrated that the functioning of the WUA was inseparably mixed with overall relations of dependency and power that characterized community life, with a clear dominance of some elite groups.

In both systems, women's presence in WUA committees merely reflected policy guidelines, and was actually nominal. Like in irrigation, not all users of drinking water supply systems were equally able to articulate their interests to the WUA leaders. In the GDWS, the WUA had an office where users could raise their concerns. Some men and women were found to access WUA office-bearers through other members, who could articulate their concerns and influence WUA decisions accordingly. The ADWS did not have a WUA office, so users had to direct their needs and requests to individual WUA leaders. In this situation, chances of their wishes being granted depended on the quality of their relations with a WUA leader.

In both case studies, the issue of payment for drinking water directly influenced patterns of access. Legal provisions such as the Water Tax Act 1966, the Water Resources Strategy 2002, and the National Water Plan 2005 all made it clear that water services needed to be charged. That meant that these policies and regulations stipulated that water services needed to be fee-based. And, preferably, WUAs were to be financially independent from the authorities for operation and maintenance.

In both systems, WUAs focused narrowly on reaching this target, at the cost of achieving wider coverage or supplying water to economically poorer sections of the community (those who could not afford paying the fees). The technological possibility to close down taps prevented people to take water illegally (something that was not possible in irrigation systems in the same location, as discussed in chapter 4). Because of this fact, leaders of drinking water associations (some of whom were the very same people who had presided over irrigation WUAs discussed in chapter 4) were found to be more actively involved in regulating water distribution and fee collection compared to what happened in irrigation systems.

Though fee collection is a justifiable method to finance repair and maintenance costs, the focus on cost recovery takes attention away from questions of equitable access, with negative impacts on the poor. Since WUA decisions were not taken very democratically, poor women users, who had come under financial pressure because of the GDWS upgrading, could do very little to influence WUA decisions, or to express their plight officially.

These findings are in line with what Ribot & Peluso (2003) suggested, arguing that access is about the ability to benefit from things (in this case, the water system and the institution, i.e. the WUA in the village) that is akin to a 'bundle of powers'. The findings are also in line with the analysis of Mollard & Berry (2010), who showed that the ultimate outcome of participatory approaches in water management to ensure access is determined by power struggles among users. The power relations between and within the WUA and its members were determined firstly by economic status, secondly by education level, and thirdly by closeness to powerful people.

At the same time, the frequency of repairs and maintenance that these systems require – and the high costs involved - also raises serious questions about the suitability of river diversion designs for public water supply systems in flood-prone regions like the one studied.

Though the drinking water policy of the Nepal government envisioned users' organizations as democratic institutions and crafted policies to ensure a minimum representation of marginalized groups (including women and low-caste groups), such policies appear to do little to ensure access for all. Large differences in water access remain for different users; differences that are linked to more generally occurring differences in wealth and power. Also, the policy goal of access to all sometimes clashes with the ambition to recover maintenance and operation costs from users, especially when these are relatively high because of frequent flood damages or unsuitable designs.

Part II

Doing Gender

The implementation of gender components of water policies

Part II analyses the linkages between the gender components of water policies and their implementation by the water bureaucracy in Nepal. The analysis focus on the implementation of policy provisions to increase women's participation in water users' committees by personnel in the public agencies of the irrigation and drinking water sectors.

It seeks answer to the second subquestion discussed in chapter 1:

How do organizational cultures, individual convictions, and professional identities combine to shape efforts at different levels to implement policy measures to improve women's participation in water management?

I use the concepts of 'professional identity', 'organizational culture', and 'individuals' convictions on gender' as an analytical tool to understand the interfaces between policy directives and implementation, linking this to an analysis of the formal space to think, talk and act about gender within implementing agencies.

I analysed the actions of office holders from three consecutive stages: first, whether and how the policy shaped the *intentions* of an officer; second, what were the *incentives* for such a functionary to implement the policy; and third, what had been their actions *in practice* to encourage women members to be in WUA committees.

This part of the thesis includes chapter 6, 7 and 8. Chapter 6 is descriptive as well as analytical to understand normal professionalism of department of irrigation (DOI) and Department of Water Supply and Sewerage (DWSS). Chapter 7 and 8 analyse officers' actions on doing gender, respectively at DOI and DWSS.

Chapter 6: The space for addressing gender concerns in the Nepalese water bureaucracy

The Irrigation and Drinking Water Departments of the Nepal government - I call together 'the water bureaucracy' in this thesis - have common origins in the modern bureaucracy of Nepal, developed since 1951.

This chapter focuses on the changing possibilities to think about and act on gender issues within this water bureaucracy, through a review that includes an historical analysis of these water departments, and an analysis of their organizational priorities and formal incentive structures. My hypothesis is that the space to think and talk about gender within an organization significantly shapes the implementation of gender-specific policy measures.

Based on work by Chambers (1988) who argued that the 'normal professionalism' of any organization influences the possibility to address reforms, I assume that the ability and willingness of water sector bureaucrats to work on gender issues depends on the possibilities to combine this with their perception of their normal work and roles. If the organizational mission does not accommodate gender objectives, and if there is no formal incentive structure to encourage officers to implement specific gender measures, attempts to deal with gender risk will be ineffective (Longwe 1997; Miller & Razavi 1998).

I analysed organizational priorities and culture, based on the vision and mission documents, the organogram, and staff composition (Ely & Meyerson 2000) of the water bureaucracy. Organizational focus was analysed in relation to reasons for its inception, change in organizational approach, and staff composition over time. Other characteristics analysed included financing and formal staff monitoring systems. Data sources were both of a secondary (literature and policy documents) and primary nature (interviews with officers and participant observation).

My analysis concludes that the normal professionalism of the Department of Irrigation (DOI) and the Department of Water Supply and Sewerage (DWSS) employees was characterized by:

- 1) a focus on construction of water systems, with an emphasis on technical input
- 2) a domination of male civil engineers
- 3) a strong hierarchy among staff members, and
- 4) a dependency on foreign aid and grants to execute water structures.

In all, this chapter will show that there are few formal or informal incentives encouraging officers to deal with questions of gender, or to work actively towards realizing the objective of improving women's participation in Water Users' Associations (WUAs).

6.1 Nepalese bureaucracy (from 1951)

‘Modern’ Nepalese bureaucracy can be said to have started in 1951, when the notion of ‘*Vikas*’ - development - became the *raison d’être* and mission of the modern democratic state. Nepal was then rated as one of the poorest countries in the world, with low development indicators, including low literacy and high mortality rates as well as poor infrastructure. This considerably helped drive the expansion and strengthening of the bureaucracy. The steadily increasing amounts of development aid also significantly influenced it with a prominent role of the United Nations (UN) since 1952. The United Nations Development Programme (UNDP) provided technical assistance, with mainly Indian administrative experts providing help to strengthen the Nepalese bureaucracy or execute administrative reforms (Dangal 2005). Throughout, Nepal’s bureaucracy was therefore influenced by international models, most notably of Indian bureaucratic structures and procedures that were themselves the outcome of a colonial - highly centralized and hierarchical - bureaucracy.

Between 1956 and 1960, the Administrative Reorganization Planning Commission (formed in 1956) played an active role in shaping Nepalese bureaucracy by initiating the Civil Service Act 1956 and Rules 1957. This act distinguished and classified different service groups, and developed systematic procedures for the recruitment of bureaucrats. One service group so distinguished was the ‘technical engineering’ group. It was to recruit staff for the DOI and DWSS, among others, and assumed responsibility for the development of the human resources and capacities needed to implement national programmes for water infrastructure.

Sharma (1992:273) characterized the initial Nepalese bureaucracy this way:

‘Remaining under the close supervision of the palace secretariat, the bureaucracy was the instrument for implementing the decisions of the palace. Through a rapid expansion of this bureaucracy, the regime controlled the level of political opposition by absorbing potentially dissident young intellectuals into the system.’

Between 1960 and 1980 alone, the number of civil servants rose from 3,000 to 70,000 (Sharma 1992:273). The bureaucratic structure was expanded to 5 development regions, 14 zonal areas, and 75 districts over time. By 1990, the number of permanent civil servants had risen to 100,000 (0.55% of the total population) (Shakya 2009).

As noted, this early mission to modernize depended heavily on foreign funds. After the UN in the first Five-Year Plan period, the USA and India were the main donors, followed by China, the UK, and Switzerland (Sharma 2000:120).

While many development programmes taken up by the government were funded by donor agencies, they were implemented in a project mode as a programme of the departments. Because these initiatives often did not become an institutionalized part of the bureaucracy, many such initiatives were found to be unsustainable (Des Chene 1996, Shrestha 1997,

Sharma 2000). At the same time, the rapid expansion of the bureaucracy created problems including corruption and inefficiency (Shakya 2009).

After the restoration of the multiparty democracy in 1990, the working approach of the Nepalese bureaucracy underwent changes. Priorities of the government shifted from service provision to people's participation and decentralization. The Administrative Reform Management Committee was established in 1992 to restructure government organizations and reduce staffing levels. Accordingly, district offices were merged to form division and subdivision offices.

A new Civil Service Act 1993 (HMG 1993a) and its Regulation (HMG 1993b) were enacted, which emphasized a 'performance-based promotion system'. It distinguished ten different professional/occupational services, fifty-one groups, and forty-one subgroups within these services (Poudyal 2009:26). One such service group was the Nepal Engineering Service, from which the majority was recruited for the DOI and DWSS.

The Act further classified bureaucrats into *gazetted* and *non-gazetted* officers. '*Gazetted*' referred to technical staff responsible for the implementation of periodic plans, with the specific designations of 'special', 'first', 'second', and 'third class' officer. '*Non-gazetted*' personnel were support staff, similarly subdivided into 'first', 'second', 'third', and 'fourth' categories. There are other non-levelled support staff. Approximately 90% government workers were *non-gazetted* (support) staff, of which almost 35% were cleaners and messengers (ADB 2001:6). This meant that only 10% civil servants were at officer level.

Pradhan (1970, cited in Dangal 2005:43) claimed that the problem of the Nepalese bureaucracy lied in its composition. The author argued that this bureaucracy was composed by influential sections of the population or the educated elite, who had specific norms, values, and ways of looking at problems.

Apparently, the composition of the Nepalese bureaucracy represented (and continues to represent) a dominance of men and certain caste groups. This is most probably the legacy of administrative procedures from before 1951, which were a blend of civil and military systems then (Sapkota 1997:43). In those early days, recruitment of government employees was open only to certain caste groups, a practice known as *Thar Ghar*. This practice continued to influence a caste-based representation in the country's bureaucracy (Dangal 2005:40), including the water departments.

Data from the Public Information System 2003 of the Nepal government showed, that only 8% civil servants were women. Female bureaucrats formed only 5% of the human resources of the technical engineering services group (Udas 2011).

In addition to caste and gender, Poudyal (2009) argued that important characteristics of the Nepalese bureaucracy were also formed by the family backgrounds of its officers:

'Recruitment data of the Public Service Commission from 2003-04 to 2006-07 showed that more than 75% of civil servants come from agriculture as their parental occupation (PSC 2009). This has a paramount effect on the mentality and behaviour of the administrator because of the prevailing landlord-tenant relation in agriculture. In addition, the age structure is also highly skewed, since almost 73% of the civil servants are above 40 years of age. All these situations along with factors of structural and operational malfeasance have led to authoritarian culture in Nepalese bureaucracy.' (2009:43)

The water bureaucracy

These general features of the bureaucracy were also visible in the water sector. The government first established an administrative unit for the expansion of irrigation in the 1950s and later termed it DOI. The same unit began working for drinking water services from 1966 till 1972. In 1972, a separate Department of Drinking Water and Sewerage (DWSS) was established.

The initial government priority on irrigation came from their definition of development (or *Vikas*) as economic growth. Investments in irrigation were chiefly motivated by the expectation that they would result in an increase in productivity and economic progress.

For instance, Chapter 9 on Irrigation in the First Plan mentioned:

'... that the net increase in annual agricultural production resulting from the 2.5 crore rupees irrigation programme may be as much as 2.5 million maunds (100,000 tons) which, at Rs. 10 per maund, would come to a total of about Rs. 2.5 crores. In addition, net revenues to the Government calculated for a water cess rate of Rs.8 per bigha (1 bigha=1.67 acres) on government irrigation land, would rise to a level of more than 1 million rupees a year.'

Water was also seen as source of revenue generation and foreign investment in the country. In the initial plan periods, government investments in irrigation were therefore much higher than those in drinking water (Sharma 2000:120). The DOI was the main public agency to help implement this irrigation mission. It was only in 1972 that health problems related to hygiene and safe drinking water started assuming a high enough priority to justify a separate drinking water department. A separate chapter on drinking water and sewerage in the Third Periodic Plan explained that state investments in drinking water were needed for a healthy physical environment:

'Two things are necessary to create a healthy physical environment: (a) a supply of pure water in adequate quantity and (b) a sanitary sewage disposal system.' (Third Periodic Plan, 1965-1970, HMG 1965)

Both government departments - DOI and DWSS - had been established to construct water systems initially. Over time, attention in plans and programmes shifted from just construction to include management and participation as well.

6.2 The Department of Irrigation

6.2.1 Brief history

The Department of Irrigation (DOI), originally named *Kulo Adda* (Canal Office) and later *Kulo Bibhag* (Canal Department) came into existence as a sub-department of the Ministry of Works and Transport in 1952. As this name suggests, the office had been especially established to expand canal structures in the country. Just as in India and elsewhere at the time, irrigation development meant the construction of systems that were centrally managed with a permanent or semi-permanent diversion, and conveyance structures (such as iron gates and cement-lined canals), that allowed for the capture and diversion of water to supply large surface areas – in Nepal mainly the flat plains of the Terai. The many irrigation systems already existing in the country were considered backward. They were mostly consisting of earthen canals with temporary diversion structures made of stones and wood. As a consequence, they did not count as ‘irrigation’. ‘Traditional’ farmers were likewise considered inefficient and ignorant.

Ideas of developing the country through modern irrigation continued to figure prominently in later national development plans as well. A speech of King Birendra of 1981 illustrates this:

‘... one of our chief resources is water which, if harnessed and managed properly, holds a magic key for all-round development of our country. Used properly, not only can our rivers generate electricity, but also provide water for irrigation abundantly.’

(Speech by King Birendra in 1981, quoted in Bhatt et al. 1981:94).

The management of modern irrigation systems was perceived as requiring a centralized, hierarchical organization to deal with the acquisition, allocation, and distribution of water to farmers. The operation of new complex and modern systems, where just opening a gate would allow water to flow, was also considered something that required expertise and thus belonged to the tasks of the DOI (cf. Poudel 2003:30).

In 1967, the department was given additional responsibility for the construction of drinking water systems. So it became the Department of Irrigation and Drinking Water Supply (DIDWS) under the Ministry of Health, Canal and Electricity (Timilsina et al. 2008).

It acquired additional responsibilities to carry out groundwater projects in 1968 (Gurung 2003:155) and river training in 1970. In 1972, the government decided to institute a separate department for drinking water, but added a new responsibility, meteorology, to the Irrigation Department, naming it the Department of Irrigation and Meteorology, under the Ministry of Food, Agriculture, and Irrigation (Benjamin et al. 1994). The addition of meteorology

underscored its already technical and natural science focus. The DOI was not only there to construct irrigation infrastructure, but also to predict the future of the country scientifically, at least in water terms.

Yet the DOI was not the only government department dealing with irrigation. By 1987, more and more line agencies (such as the departments of agriculture and of local development, the Agricultural Development Bank, and other, multi-service agencies) had become involved in the implementation of irrigation projects, as part of the national goal to increase food production for basic needs. The larger-scale irrigation projects nevertheless continued to be implemented by the DOI, including their infrastructure.

By 1981, the DOI had established 5 regional offices in 5 development regions as well as 75 district offices, spreading its wings all over the country (Poudel 2003). In 1988, all the irrigation programmes implemented by other agencies were again brought under the responsibility of the DOI. This was part of an attempt to consolidate national efforts to expand the irrigated command area, making it again the lead national agency in the sector.

An important justification for the existence of the DOI comes from data that showed a gap between agricultural productivity and (projections of future) food demand, on one hand, and between potentially irrigable area in the country and actually irrigated areas, on the other (Neupane 1992:27).¹ They also showed that in 1989 only 56% of potentially irrigable land had received irrigation (Pradhan 1989), whereas this figure was 71% in 2010 (DOI 2010). This meant that even after twenty years still 29% were left without any irrigation infrastructure. They further characterized about 40 out of 75 districts in Nepal as food deficient (IRAM 2008:20).

The data, together with the gaps identified, unequivocally showed the need to expand the area under irrigation, that is, the need for more irrigation infrastructure. They brought out the important role of the DOI in building such infrastructure for an enhanced productivity to meet (future) food demands. The National Water Strategy 2002 (HMG 2002a) and the Water Plan 2005 (HMG 2005a) likewise showed this importance, emphasizing the significance of irrigated agriculture for national development.

So, the focus of the DOI could be summarized as the construction of ‘modern’ irrigation systems to bridge the gap between irrigated and non-irrigated areas, and to increase agricultural productivity.

6.2.2 DOI staff

Until the 1980s, the core staff of DOI were all civil engineers. Table 6.1 shows the increasing number of engineers and overseers from its inception to 1982.

¹Much of this data had been collected and produced by staff employed or hired by the DOI itself.

Table 6.1: Professionals with a technical background at the DOI

Year	Bachelor in Engineering Degree	Overseer	Total
1952	4	15	19
1955	7	31	38
1960	22	67	89
1965	47	109	156
1970	82	201	283
1975	147	343	490
1980	372	708	1080
1982	438	833	1271

Source: Poudel 2003:55

In 1980, 55% of the DOI staff had a technical background; 45% were administrative and support staff. By 1982, 85% of the graduate staff were civil engineers, whereas the remaining 15% were hydrologists, geologists, and meteorologists. Among the overseers, 75% were civil engineers (Poudel 2003:56). So, the department in the 1980s was a house of civil engineers, whose expertise was the design and construction of infrastructural works. This remained much the same at the time of the research and shortly thereafter: in 2008, 80% of the core staff were civil engineers.

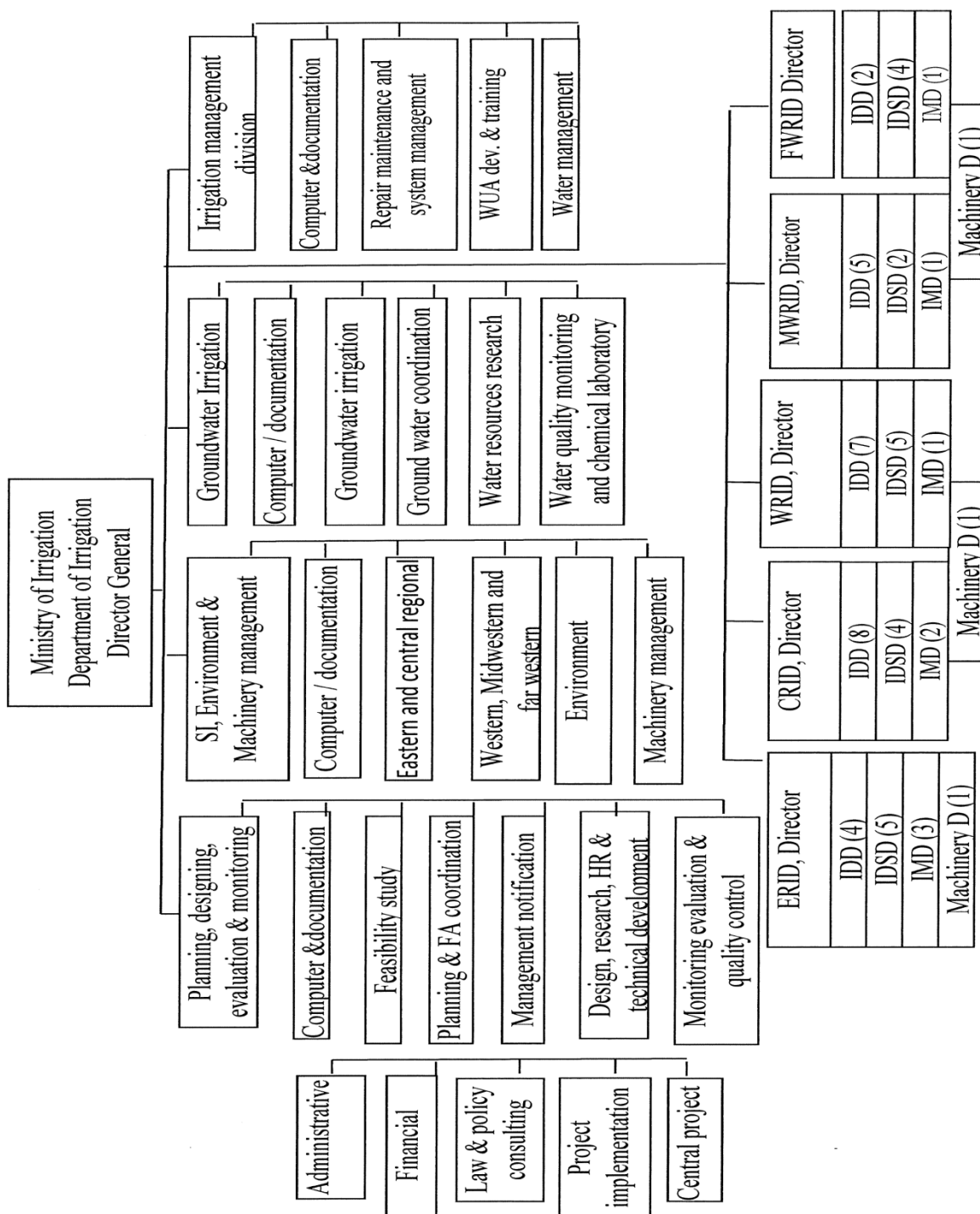
The department is headed by a Director General (DG) followed by four Deputy Director Generals (DDG). They respectively head the following divisions: 1) Planning, design, evaluation, and monitoring; 2) Surface irrigation, environment, and machinery management; 3) Groundwater irrigation, and 4) Irrigation management (Figure 6.1).

There are 5 regional offices, 26 divisional offices and 20 subdivisional offices to implement irrigation projects at community and farm levels.

In addition, 3 mechanical divisions exist to provide mechanical support to the 5 regional offices, especially for large irrigation projects located in the Terai.

There are 8 irrigation management divisions and 8 groundwater irrigation field offices, monitored by the regional offices under the central office.

The DOI had published its working modalities in 2004 to define the responsibilities of staff members (DOI 2004b).



SI- Surface irrigation, D- Division, ERID- Eastern regional irrigation directorate, CRID- Central regional irrigation directorate, WRID- Western regional irrigation directorate, MWRID- Mid-western regional irrigation directorate, FWRID- Far-western regional irrigation directorate, IDD- Irrigation Development Division, IDSD- Irrigation development subdivision, FA- foreign aid, HR- Human resource; number in brackets indicates number of divisions per regional directorate

Source: DOI 2006

Figure 6.1 Organizational Structure of the Department of Irrigation

The DG can be appointed from any civil service group, and need not necessarily have an engineering background. So far, however, the DG has always been an engineer, with one exception of a geologist (see Table 6.2 in the following section). As regards the four Deputy Directors, two sections (Planning, design, evaluation and monitoring, and Groundwater irrigation) were headed by civil engineers with specializations in irrigation. An engineer specialized in geo-hydrology headed the Groundwater irrigation division and a specialist in agro-irrigation headed the Irrigation management division (DOI 2010).

In 2006, of the 165 positions in the central office, 57 were for engineers, and another 30 were for technicians from engineering backgrounds. Of the remaining posts, 3 were for sociologists, 1 for an agricultural economist, 12 for administrative staff, and 61 for support staff. One sociologist was in the planning division and the other two were in the irrigation management division.

Only 19 of these positions were held by women. At division and subdivision office, an engineer heads the office accompanied by *gazetted* engineers (1 or 2) and non-gazetted overseers (4 to 6) and an association organizer (AO). This means that also at division and subdivision office level, the majority of the staff were civil engineers.

Overall, the staff composition shows the organization is dominated by civil engineers as documented by Poudel (2003) in 1952 to 1982, Timilsina et al. (2008) and my field studies in 2006 and 2010. Figure 6.2 shows this domination among the gazetted and non-gazetted staff of DOI in 2010. Though the increased emphasis on irrigation management would seem to demand the recruitment of more social scientists, their number was still limited.

The analysis further reveals that 98.5% of the DOI staff were men, and 40% came from the *Madheshi* community, dominant in the Terai (Timilsina et al. 2008). This community practices *dowry*² and *pardah* of covering head and face of women (Sah 2008). Engineering is a profession that fetches a high dowry among them, so parents would encourage their children (sons) to opt for this profession.

There is a relatively stark gender-based segregation with the *Madhesi*. For instance, there are sharp boundaries between the public and the private domain, with men considered being responsible for public politics and women for household chores (Acharya & Bennett 1983). Men are expected to protect women, whereas women are to look after the children, kitchen, and household work.

² Dowry in the Terai refers to payment in cash or in kind to a bridegroom's family upon marriage. A bridegroom with a specific profession can command a different rate of dowry, depending on the market value determined based on his salary. The payment is handed by the bride's parents to the bridegroom's parent.

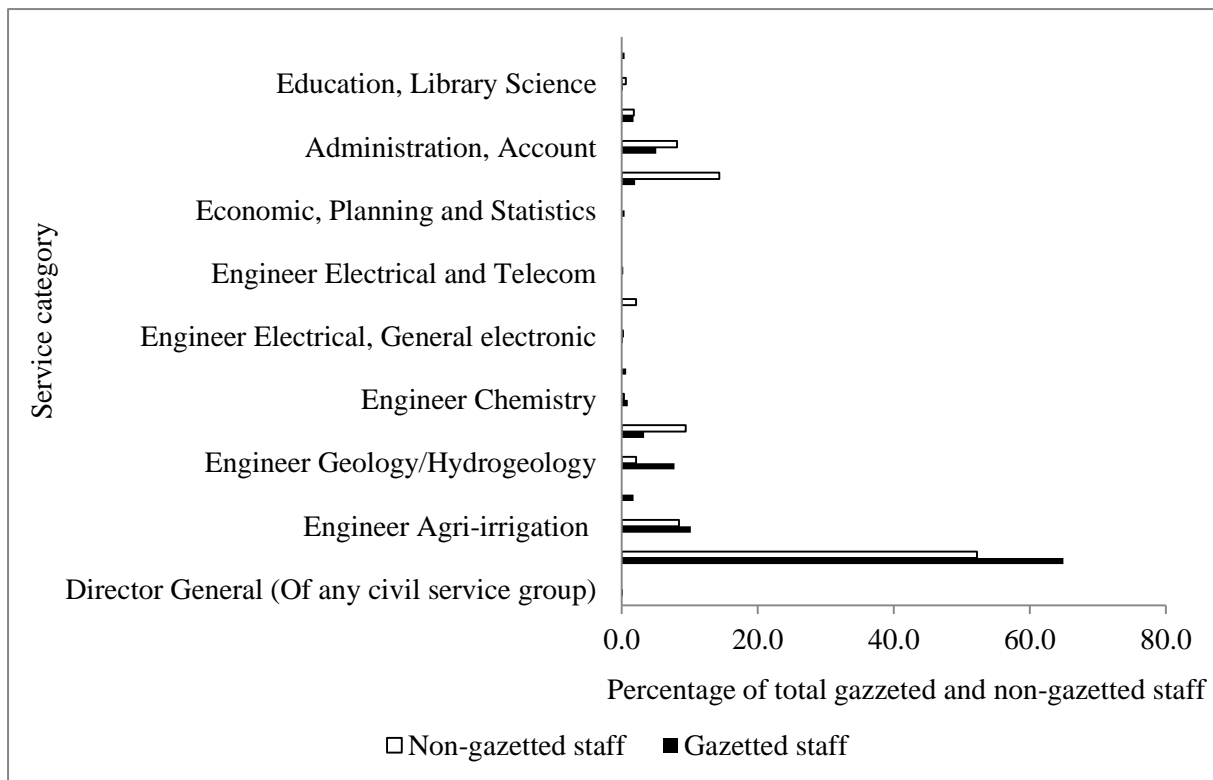


Figure 6.2 Gazzeted and non-gazzeted staff composition of DOI, 2010

Source: (DOI 2010)

This is not to raise an issue of discrimination here. Rather, I point out the situation that most engineers of the DOI have been, and are, socialized in an environment with relatively sharply delineated gender roles. This subculture is characterized by clear norms about what it means to be a ‘proper’ man or woman. Being a ‘good man’ means being someone who can take care of and protect women, and earn money for family needs. A ‘good woman’ is someone who is obedient and silent.

The norms of this subculture seem to contradict with the norms that prompted the policy call to increase women’s participation. People belonging to this subculture may find it difficult to want to become involved with efforts to improve the participation of women in WUA. To them, this may be interpreted as unheard-of efforts to meddle with the private lives of users. And so, their respect for the private domain, which is the domain associated with women, may go against supporting women to participate in public WUA meetings.

6.2.3 Hierarchy and influence of Indian irrigation development

Another characteristic of the DOI is its hierarchal organizational structure. This may be partly a legacy of *colonial* and Indian irrigation developments. It was in 1952 that Indian bureaucrats helped the Nepal government to set up what was then called the Canal Office (DOI 1999; DOI 2004a). Mr Katar Singh Garcha, a retired Indian engineer, was the first head of this office (Poudel 2003:29). The other engineers recruited for the office were Nepalese engineers

trained in Indian institutes such as the Thomason College of Engineering, Roorkee, established by the British in 1848 (Dixit et al. 2002). A review of heads of the department from 1953 to 2013 reveals that nine of the fifteen chiefs of the DOI had been educated at Indian colleges (Table 6.2). In addition, many other engineers recruited by the department did their studies in India.

Table 6.2. Educational background of the DGs of the DOI (1956-2003)

Tenure	Qualification	Appointment*	Educational background
1956-60	B.E Civil	Engineer	Calcutta University, India Bengal Engineering College, Calcutta University, India
1960-73	B.E Civil	A.E.	India
1973-80	B.E./M.E	A.E.	Strathclyde University, UK Roorkee University, India; Strathclyde University, UK
1980-87	B.E Civil	A.E.	UK
1987-90	B.E Civil	A.E.	M.S. University, Baroda, India
1991-92	B.E Civil/M.S	A.E.	N.A.
1992-97	M.Sc./B.Sc.	Geologist	Karnataka University, India; Leeds University, UK
1997-99	B.E Civil /M.Sc	Engineer	N.A.
1999-01	M.E	A.E	IIT, India/ Imperial College, UK
2001-03	M.E.	Engineer	Delft University/ The Netherlands
2003-05	B.Sc./M.Sc.	Geologist	Not Available
2005-07	B.E./M.E.	A. E.	Belgium
2007-10	B.E./M.E.	A. E.	Roorkee University, India; AIT, Bangkok
2010-12	B.E./M.E.	A. E.	Roorkee University, India
2012-13	B.E./M.E.	A. E.	Roorkee University, India

*First appointment, A.E- Assistant Engineer, B.E. Bachelor of Engineering, M.E. Master of Engineering *Source:* DOI 2004/Personal communication president INPIM Nepal, 2010/Engineer, DOI

Indian education in engineering was based on colonial irrigation approaches, influenced by strong military elements, as well as on the experiences of large centralized irrigation projects in India. These were strongly hierarchical projects that fell under the responsibility of the colonial army, in which controlling farmers was important (among others, for the collection of revenues) (Gilmartin 1999). After Independence, the Indian government continued promoting large irrigation systems considered central to modernizing agriculture in the country as a whole, as shown by the famous statement of the then prime minister, Jawahar Lal Nehru: *'Dams are the Temples of Modern India.'* (Roy 1999).

So, the DOI was groomed after the Indian model as a hierarchical and authoritarian organization, set up to construct and manage large and centrally run irrigation projects. Articulating or thinking about gender issues would have seemed relatively inconsequential and unimportant in such an atmosphere.

6.2.4 Vision, mission, and goals

To understand the vision, mission, and goals of the DOI, I conducted an analysis of three documents: the Agriculture Perspective Plan (APP) 1995, the Water Resource Strategy Nepal (WRS) 2002, and the National Water Plan (NWP) 2005. The APP (NPC 1995) is a 20-year framework for agricultural development prepared with assistance from the International Development Agency (IDA) and the Asian Development Bank (ADB). The WRS (HMG 2002a) was prepared with financial assistance from the World Bank/IDA and CIDA. The NWP (HMG 2005a) was to guide short-, medium-, and long-term plans for the water sector, including investments and human resource development.

Together these documents targeted to increase the irrigated area in the country and achieve cost recovery of government investments. Guided by the various plans, the mission of the DOI, at the time of the study, was to achieve *viable (cost effective)*, *sustainable (managed by users)* and *efficient (increase productivity)* irrigation systems (DOI 2004a:35).

The APP envisaged that approximately 61,2000 hectares of irrigable land would be converted to year-round irrigation by 2017. This target would almost bridge the gap between irrigable and irrigated area noted in 2002 (HMG 2002a:14). In addition, the WRS 2002 emphasized the importance of cost recovery in the irrigation sub-sector while achieving the vision of the APP.

It stated:

'...cost recovery has been a problem for many years, and particularly government-operated surface water schemes. The irrigation sub-sector simply attempts to recover operation and maintenance costs. In most cases, cost recovery does not cover even operation and maintenance (OM) costs. The practice of providing free or low cost water had led to conclude that a better solution is to promote shallow tube-well development whereby OM costs are born completely by the farmers. Many government schemes have been transferred to community management in the last decade and this will continue. In this way, Nepal should see an improvement in cost recovery over the years.' (HMG 2002a: 28)

The WRS also emphasized irrigation as a means to agricultural development, and broadened the objectives of irrigation development to promote increased productivity under irrigation systems (HMG 2002a:85). Further, the NWP designed a short-, medium-, and long-term water plan to provide year-round irrigation³ to 67% of the total irrigated area in 2027 (HMG 2005b:37).

³'Year-round irrigation' denotes the availability of water whenever required (i.e., demanded) for an optimal use of land for agricultural production. If the land has more than 155% cropping intensity on average, it is said to have year-round irrigation (HMG 2002b:2)

These visions, in turn, guided government investments. About 30% of annual regular expenditure was spent on economic and social sectors, of which 34% was on irrigation (HMG 2002a:27). Hence, irrigation was an important sector receiving a large share of public funds.

The DOI had articulated its organizational goal as:

'...Build and promote an irrigation system that is viable, sustainable and efficient...'

(DOI 2004a:35)

The above information indicates more or less what these terms wanted to express. *Viability* meant making sure that investment, and operation and maintenance (O&M) costs would be recovered through the collection of water fees from users. *Sustainability* referred to the ability of users to continue using and managing the systems – and mobilize resources for system maintenance – through active WUAs. *Efficiency* referred to 'more crop per drop; - increased cropping intensity and productivity.

None of these terms reflected any concern with issues of social or gender equity. On the contrary, all three keywords endorsed that questions of efficiency, productivity, and cost-recovery would determine the working ethos of the DOI. This suggests that, within the DOI, there has been little space for explicit attention to questions of (gender) equity. Also, the working environment does not appear to have been very conducive to promoting and supporting efforts to improve women's participation in WUAs - unless it was seen to promote viability, sustainability, and efficiency.

6.2.5 Staff evaluation and monitoring: formal incentives

At the time of the study, DOI officers were evaluated in terms of their capacity to spend allocated budgets properly (i.e. financial expenditure), the quantity of work implemented versus what had been planned (i.e. volume of work performed), and timely implementation. Never did an officer's achievement to improve women's participation in users' committees form a goal or did it count.

The DOI's administrative procedures for the selection and promotion of an officer, which were based on work performance, were also applicable to evaluation and monitoring. An immediate supervisor had a strong say in the total evaluation. There was no scope for junior staff to express their views of the senior officers they worked with. This, obviously, enforced hierarchy, command, and control.

The hierarchy of supervision was as follows: an officer in a *gazetted* special post would be the highest in rank, followed by *non-gazetted* posts, with non levelled posts ranking lowest.

The government had approved 1869 positions in the DOI of which the ratio of core staff was 1:5:19:35 of *gazetted* first, second, third rank, and *non-gazetted* respectively. On average, there were five *gazetted* second-class officers under each *gazetted* first-class officer.

Then there were about four *gazetted* third-class officers under each *gazetted* second-class officer, and finally two *non-gazetted* first-class officers under each *gazetted* third-class officer (Timilsina et al. 2008:1).

There were two types of evaluation: one for trimester work performance, and an annual work performance evaluation. Employees had to submit their completed work performance evaluation forms to their supervisor. The concerned officer, one class higher than the employee being evaluated was the supervisor. The officer one class higher than the latter was the reviewer.

An officer's work performance was evaluated through marks given by the supervisor, the reviewer, and a review committee with an importance ratio of 5:2:1 (HMG 1993a & 1993b), giving the supervisor the highest say.

Recommendations for promotion of an employee were screened by a promotion committee, considering an officer's competency. In such a competency evaluation, a maximum score of 100 was given, in the following proportion: 40 for work performance evaluation, 28 for seniority in the present class, 15 for service in the geographical region; 15 for educational qualification, and 2 for training (Clause 24, Civil Service Act 1993, Amendment 2007). That meant that work performance evaluation carried almost half of the total weight for promotion, and was very important as a consequence.

The chief of an office at each level such as subdivision, division, and regional office would fill in work performance forms of an employee for an evaluation once every three months. *Gazetted* officers were evaluated with respect to fulfilment of their responsibilities, based on prescribed or assigned work efficiency and results; discipline; regularity and activeness; communication management and creativity. *Non-gazetted* officers were evaluated with similar criteria plus qualities of diligence and capability of record management. Several of these criteria were abstract, so they depended on the subjective view of the supervisor. The immediate supervisor would refer to the earlier mentioned evaluation sheet in the annual work performance assessment.

The annual work evaluation form would be completed by the employee mentioning a maximum of five works performed as targeted in a year. The details would be filled in a format with four areas for evaluation: (1) the quantity of work performed (planned vs. achieved); (2) the estimated budget of the work (planned budget vs. expenditure); (3) the time required to complete the work (time scheduled vs. taken); and (4) the standard of work performed (such as the functioning of the water system, or water fee collection among farmers). The parameter that define standard of work was rather vague and would depend on the perception of the supervisor. Achievement was presented in terms of a percentage of planned activities. Another column documented all activities performed outside those targeted during the work period (HMG 1993b: Form 15/15a). The supervisor would evaluate the consistency of the results provided and assess them with the reviewer.

This system of evaluation and monitoring of an officer's performance fits the earlier noted linear hierarchy of the organization, where the officer was just 'upwardly' accountable to the chief of the office. Nowhere could users evaluate supervisors and senior officers. The implication is that officers were only accountable to their immediate bosses, not to users.

Since there was no target or formal requirement to increase women's participation, there was no formal assessment of an officers' performance with regard to this policy objective. Also, the way a chief engineer understood and perceived the gender agenda of water policy remained unrecorded.

In addition, and possibly making matters worse, the existing organizational structure offered different levels of motivation to staff responsible for construction, i.e. engineers, and those responsible for social mobilization, i.e. sociologists and association organizers (AOs). AOs working at division and subdivision levels can be likened to 'street-level bureaucrats' in that they were directly responsible for implementing gender policy measures, with inputs from sociologists at the central office and regional office.

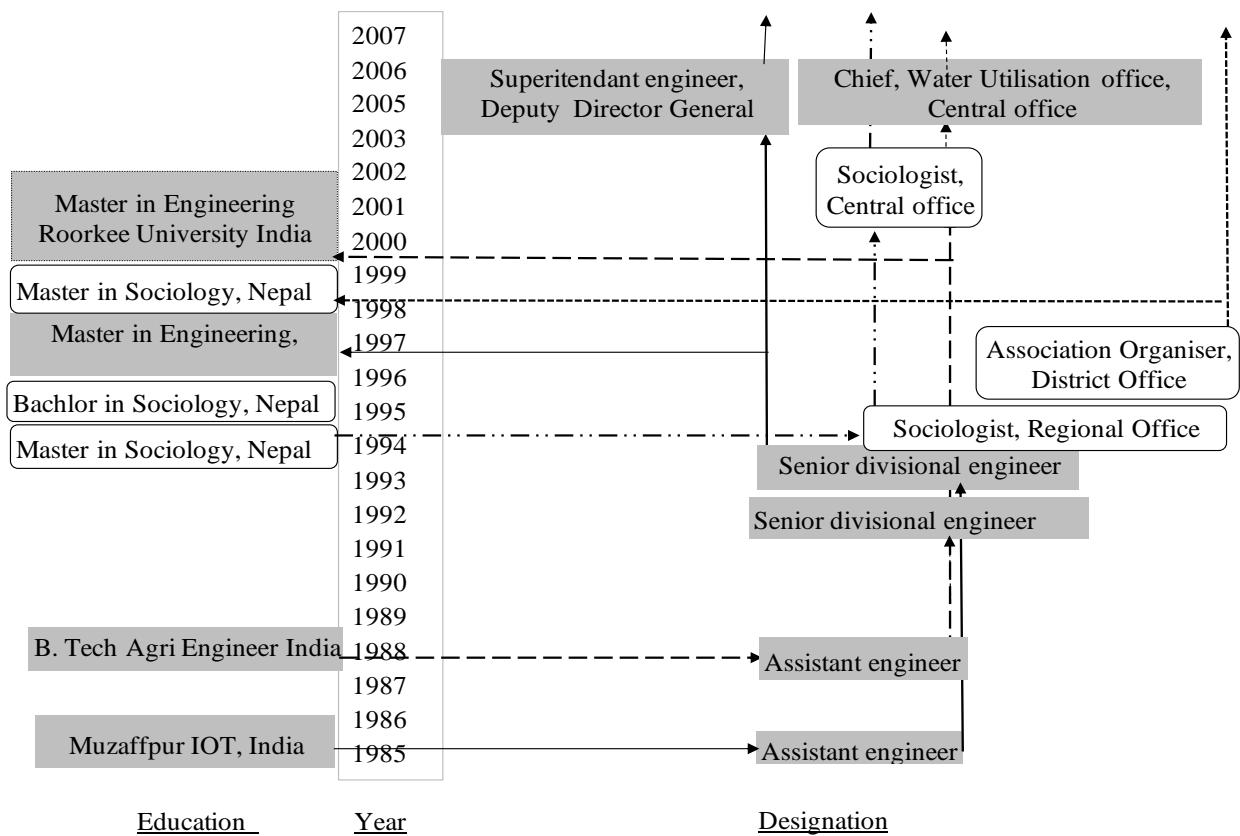
As noted, in recruiting civil servants, the Nepal government distinguishes between gazetted staff (whose names are published in the *Nepal Gazette*) and non-gazetted staff (who are appointed by the head of the department, i.e. the DG), who are to support the gazetted officers. Sociologists, including those responsible for the implementation of the gender policy, are ranked only as gazetted third-class officers in the DOI. For social scientists, therefore, there was little career perspective in the DOI. This explains why DOI sociologists were often eager to be transferred to departments where they have better prospects for advancement.

The AOs belong to the *non-gazetted* rank of officers, with a minimum intermediate level education. Some AOs even have Bachelor and Master degrees. So, they too did not see any possibility for promotion within the DOI. Many are involved in part-time jobs in addition to their AO responsibilities.

Figure 6.3 illustrates cases of the career growth of two assistant engineers, a sociologist, and an association organizer.

Though all four officers had a Masters' degree by 1999, both engineers, having joined as assistant engineers, became senior divisional engineers. Finally one became chief of a unit in the central office and the other a Deputy Director General. The association organizer and sociologist remained at the same rank level throughout their careers.

The last two officers mentioned that their lack of career perspectives de-motivated them. It also meant that, hierarchically, the sociologist and AO have a lower status in the department. This can be taken as a reflection of the secondary importance accorded to their work compared to that of engineers. It also is a further indication of how the formal space to talk about, and act on, gender within the DOI was limited.



Note: An arrow to the job position indicates entry into the job with an academic degree, an arrow from the job position indicates pursue of higher studies on the job. Dark shading refers to staff with an engineering background; plane shed refers to staff with a sociology background. Arrow type indicates each actor

Figure 6.3 Promotion of two engineers, an association organizer and a sociologist over time, DOI

Source: Field data, Interview, DOI staff, 2006

6.2.6 Dependency on foreign aid and grants

The Nepal government has always depended on technical and financial assistance of donors to realize its irrigation modernization plans. Modern irrigation systems, constructed with cement and concrete, were initially new to the DOI, and the construction of such systems required large investments (DOI 1999). Their programme till 2005/06 shows that 86% of the gross command area they developed was done with external assistance (Table 6.3). This data does not include programmes implemented as projects, for example, the Irrigation Sector Project funded by the ADB and the Nepal Irrigation Sector Project funded by the WB.

Table 6.3 Funds for command area developed by DOI for surface irrigation project till 2005/06

Development regions	Gross command area		Net command area	
	Government	External	Government	External
Eastern Development Region	16170	135224	12940	103300
Central Development Region	21430	101440	17179	82733
Western Development Region	4878	38063	3902	30779
Mid-Western Dev. Region	6894	24159	14290	18675
Far-Western Dev. Region	270		304	
Percentage of total area	14	86	17	83

Source: GON 2007c: Table 2

Though the intensity of foreign grants and loans is declining, still 26% of the DOI budget was provided by grants and loans in 2007/08 (Figure 6.4). This dependency on foreign loans has influenced the functioning and working approach of the department.

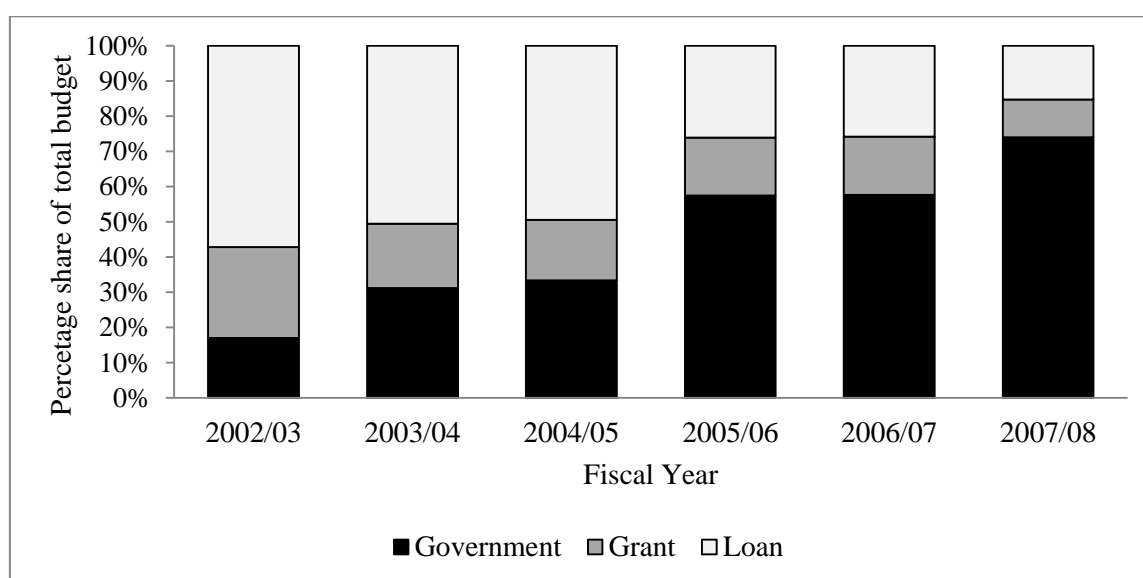


Figure 6.4 Share of grants and loans in irrigation budget

Source: Red Book of respective year, Ministry of Finance, Nepal Government

6.2.7 Change in working approach of DOI: From construction to management

Initially set up to construct canal works, by the 1980s the DOI was under pressure of donors and development banks, to change its face and become more involved in irrigation management. Concerns over the sustainability of irrigation investments led to questions on the under-performance of DOI-constructed irrigation systems (also known as Agency Managed Irrigation Systems (AMIS), (see Martin & Yoder 1986; Ostrom et al. 1994). AMISs were criticized for poor maintenance, lack of ownership feelings among users, and expensive management.

Studies showing the high performance of farmer-managed irrigation systems (FMIS) in the 1980s (Yoder 1986; Martin, 1986; Pradhan 1989) contributed to this critical review. This recognition brought in a paradigm shift in the sector. The DOI, once only involved in the construction of new irrigation systems, began its work on the rehabilitation of FMIS and revised its approach to work with farmers in a participatory manner.

Figure 6.5 based on field notes and review of literature on DOI provides an overview of the shift in the roles of the DOI from construction to management.

An irrigation officer once observed:

'The DOI that was only concerned with construction in the past had to change its face over time. Since the early nineties, the DOI is to work with farmers in a participatory manner to meet the (gendered) water needs of individuals and farming communities. After the promulgation of the Irrigation Policy 1992 that guides DOI to form water users' associations with a minimum of 20% female users' participation, the DOI is to form inclusive users' groups. After the Irrigation Regulation 2003, it is to further encourage female users' participation in the committee by 33%.'

More in general, Chambers (1988) argued that the large investments in irrigation and focus on engineering structure started to decline at global level due to increasing concerns over management of existing schemes as opposed to construction of new ones. These global discourses on irrigation development have also influenced Nepal. For instance, in 1987, the DOI established an Irrigation Management Centre (IMC), financed by the United States Agency for International Development (USAID) under the Irrigation Management Project. The DOI also established a separate Irrigation Management Division in 1988. The IMC carried out applied studies on the turnover of irrigation management in AMIS to WUAs.

In 1989, one of its study reports explained:

'Participatory irrigation management (PIM) is the basic philosophy of the Irrigation Management Project, while a joint management is to be established in large irrigation systems; the small and medium scale irrigation systems are to be completely handed over to water users.' (IMC 1989)

Accordingly, the Sixth Plan (1980-85) emphasized the need to foster maximum participation of beneficiaries in the field of irrigation development. The Seventh Plan (1985-90) recognized an underutilization of available irrigation facilities (estimated at 42%) as obstructing irrigation development, and emphasized the importance of improvements in the management and distribution of irrigation water. Two agencies, the Farm and Irrigation Water Utilization Division and the Agriculture Development Bank Nepal (ADBN) under the Ministry of Agriculture, both involved in small irrigation project implementation, exceeded their target by 3%. In contrast, the DOI involved in large irrigation project implementation could achieve only 48% of their targets (Pant 2000:49). One of the reasons identified for this poor

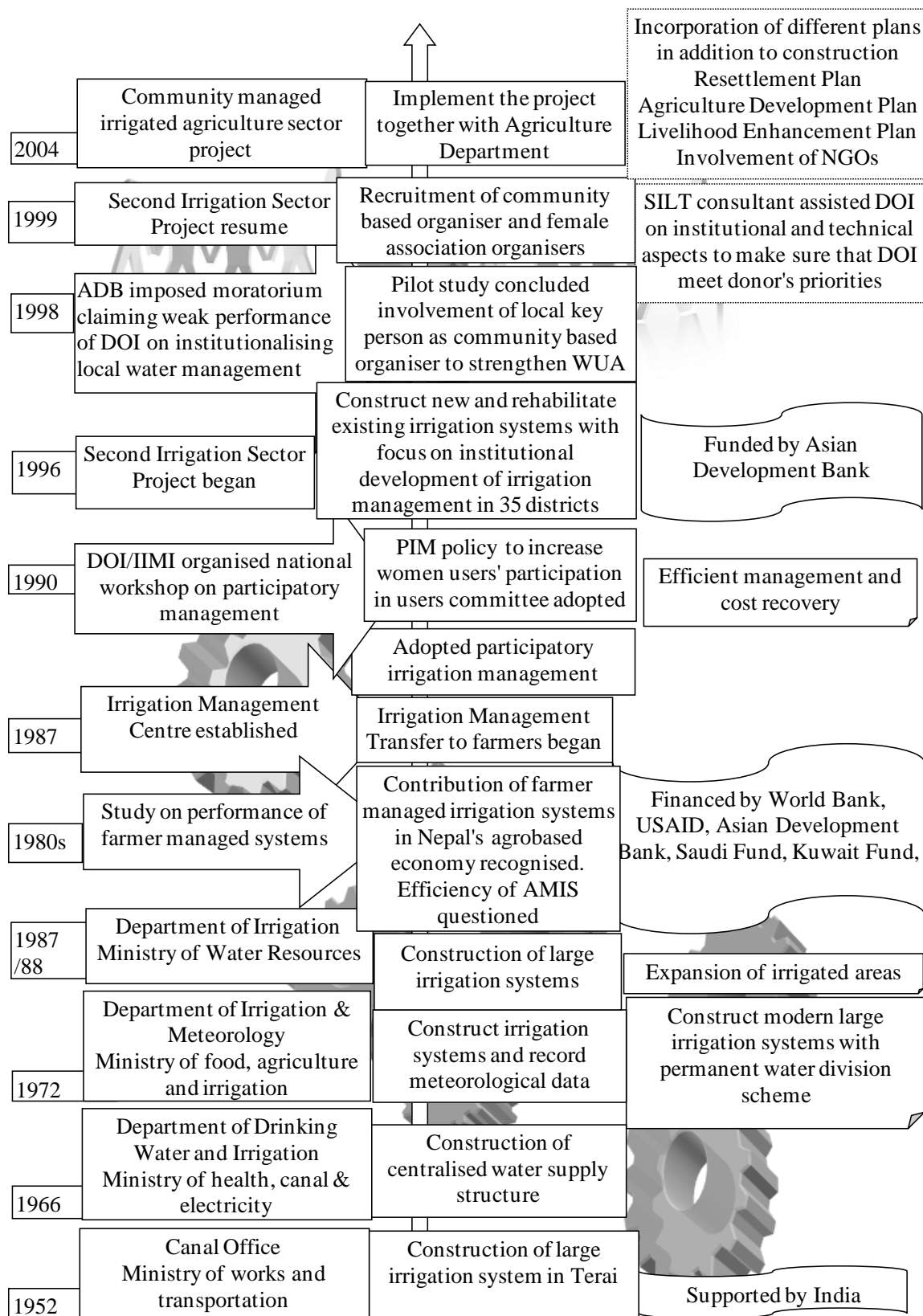


Figure 6.5 Changing mandate from construction to management of irrigation systems

Source: Field study (2004-2006)

performance was a lack of necessary attention to institutional aspects during the execution of programmes by the government agencies.

In 1988, the International Irrigation Management Institute (IIMI) published an occasional paper titled “Recommendations for consideration in the development of Nepal’s irrigation master plan” that emphasized users’ participation. This influenced general policy as well as the DOI.

Accordingly, the Nepal government formulated a working policy on users’ participation for the first time in 1989, followed by the Irrigation Policy 1989.

The question then was - who would ensure users’ participation while implementing irrigation projects? The DOI consisted of professionals trained to construct systems, not to mobilize and organize users. So, the irrigation sector decided to involve non-governmental organizations and consulting firms as a solution to carry out institutional development for irrigation management. In 1992, a national workshop titled “the Role of NGOs in Irrigation Development Management in Nepal” organized by the IIMI and ADBN for instance articulated this decision. The report underscored that the DOI could only achieve a national goal of expanding the irrigated area (Pradhan et al. 1992).

Yet, in spite of such out-sourcing, the international debates and investment trends also importantly influenced the working modalities of the DOI. Among others, it had to revise its working approach, from a top-down project design and implementation mode to one that involved users in project selection, design, and construction. Projects implemented since then no longer just concentrated on construction, but also included a management section (at least on paper)⁴. Following the introduction of the Basic Needs Programme in 1987, the related working policy on ‘Irrigation Development for the Fulfilment of Basic Needs’ was formulated in early 1989. It also emphasized the importance of users’ participation. Since then, working together with the beneficiaries of the DOI implemented project became inevitable for the DOI.

In 2002, the DOI was restructured to form 26 divisions and 20 subdivisions by merging 75 district irrigation offices. This was meant to help the Department make the shift from just implementation to management and monitoring. Also, and in accordance with the Decentralisation Act 1982 and the Local Governance Act 1999, smaller irrigation projects could be done by specifically established infrastructure development units of local government District Development Committees (DDC). Given the limitations of the DDC, large irrigation projects continued to be implemented by divisional and subdivisional irrigation offices.

⁴These included: the USAID-funded Irrigation Management Project (IMP) in 1985, the Irrigation Line of Credit (ILC) in 1988 financed by the World Bank, the Irrigation Sector Project (ISP) in 1988 financed by the ADB, and the Irrigation Sector Support Project (ISSP) in 1989 under co-financing of the UNDP, the World Bank, and the Asian Development Bank (Timilsina et al. 2008:7).

Though the DOI had adopted a more participatory approach this way, and had incorporated an agenda to increase women users' participation, donors continued to question its ability to work to with communities.

This is evident from the following example from the Second Irrigation Sector Project (SISP) funded by the ADB.

The SISP project implemented in 1996-2002 was a follow-up of the Irrigation Sector Project (ISP)⁵. Though the ISP had covered a large area, some systems were no longer operational. The ADB reported that the rapid expansion of command area by the DOI had resulted in poor quality of the technical designs and weak users' associations. So, the SISP project focused more explicitly on the institutional development of WUAs (SILT 2001). The DOI created new positions for sociologists at central and regional offices as also for AOs at district offices, to address this agenda. The AOs were to help in the formation of WUAs and the sociologists provided trainings. Mobile Irrigation Teams (MIT) consisting of a sociologist, an agronomist, and an engineer were set up to provide technical support to the district and regional irrigation offices for feasibility studies, report preparation, and technical analysis.

After only two years of project implementation, a project review mission from the ADB in 1998 expressed dissatisfaction with the institutional development of the WUAs and imposed a moratorium on financial assistance. The ADB conducted two pilot studies to assess how to best strengthen WUAs (RID 2001). One looked at the potential of including local NGOs in WUA strengthening, another at involving village-based local people as community-based organizers (CBO). After a year, it concluded that recruitment of CBOs was more cost-effective. In addition, it revised project approval procedures.

In October 1999, the ADB dissolved the moratorium and implementation restarted with these new approaches. An Institutional Development Team at regional irrigation directorate level was set up to strengthen WUAs. In addition, a SILT consultant was hired, considering DOI's lack of human resources to implement institutional development of WUAs for the SISP.

Learning from the SISP, the ADB sanctioned a loan for a third phase of the project, now named the Community Managed Irrigated Agriculture Sector Project (CMIASP) in 2004. The DOI was to be its implementing and lead agency, together with the Department of Agriculture. This project included components on social development and the local preparation of plans for water management, resettlement, and agricultural development. NGOs were selected to facilitate the preparation of these plans at community level. After the loan became effective in 2006, the project could not be implemented as planned due to confusion about roles and responsibilities among the implementing agencies (ADB 2009).

A senior engineer, coordinator of the project at the DOI, observed:

⁵SISP rehabilitated 99 FMISs covering 46,371 hectares of land and initiated 99 new irrigation systems covering 11,211 hectares in 35 districts in eastern Nepal.

'As an engineer I am not satisfied with the project implementation modalities. I coordinate more than 20 stakeholders. I see lots of money spent on planning and stakeholders' meetings (software), which otherwise would have been spent on construction of irrigation structures (hardware) that could bring water.'

- CMIASP coordinator, Field note, 2009

His statement showed his professional aspiration, (an element of the common professional attitude of engineers who get satisfaction by building structures and making water flow). The engineer used two words commonly used in the DOI: '*hardware*' and '*software*' (also see Uphoff 2004:29). *Hardware* would refer to construction activities for irrigation works, and *software* to activities such as the organization of users' associations and the management of the system. In the DOI, *hardware* would be the job of engineers and overseers, *software* the job of sociologists, AOs, CBOs, or hired consulting firms for institutional development. The distinction between *hardware* and *software* has allowed maintaining and reinforcing common professional attitudes of irrigation engineers, who continue identifying themselves with a focus on design and construction.

As noted, within the DOI there were very few staff members especially appointed to implement the *software* programme components; most staff were still engineers who deal with *hardware*. The above observation of the coordinator of the CMIASP reflects how his professional identity was hurt when activities beyond his professional desires were to be implemented. In 2010, the same coordinator mentioned how project delays were doubling the total cost due to bureaucratic procedures and requirements to take permission from ADB for every step (Shahi 2010).

This meant that the normal professional focus of the department continued to be engineering and construction, though from the outside the approach might appear changed to become more management and participation oriented.

In conclusion, this section has discussed how the DOI had been established for the construction of irrigation water systems and the same focus continued until the time of this study. The DOI has a technical orientation, which was reflected in the dominance of engineers among its personnel. Staff responsible for work on the social aspects of water management were not only few, but also the organizational structure of the DOI de-motivated them to work to their full potential, negatively affecting their work performance.

There was no formal incentive for an officer to implement the policy clause to increase women users' participation in WUAs. The dependence of the DOI on foreign grants for project implementation also influenced its working modalities. Though the focus of the DOI has changed over time from just construction of water systems to include management as well, the organizational structure continued giving priority to *hardware*.

These characteristics of the DOI, that were shaping the normal professional attitudes and work of DOI employees, point to the fact that there was very little formal space to talk and work on gender.

6.3 The Department of Water Supply and Sewerage

6.3.1 Brief history

Similar to the DOI, government interventions in the drinking water sector began as part of a wider vision of *Vikas* and modern development, that considered the existing traditional and small-scale systems of supply as inefficient and inadequate. Influenced by aid policies during the Panchayat period, the government started efforts to modernize traditional drinking water supply practices - such as supply from ponds, wells, springs, and traditional stone spouts - by developing piped water supply systems that included 'scientific chlorine treatment units'.

The government first promoted centrally-managed piped water network systems in urban areas. These were managed by a Water Office called the *Pani Goswara*.

An officer in the planning section of the DWSS explained:

'As far as I know, the Nepal government established drinking water offices to construct piped water supply systems. Initially it was the responsibility of the Irrigation Department. The government established a separate department for drinking water supply in 1972 to expand the programme. The government sent people like us to study engineering abroad (mostly in India and the former Soviet Union) so that we could come back and built structures. We were trained to design centralized drinking water supply systems. These consisted of water treatment plants designed to supply standardized volumes of water. The aim was to achieve WHO standards⁶ for water quality.'

(Officer, Planning Section, DWSS, Kathmandu, Field note, 2006)

The WHO conducted a survey on water supply and sewage disposal in developing countries in 1970. It showed only 15% of the rural population there had reasonable access to safe water. Moreover, nearly one-third of the world population including Nepal had no proper water supply.

To improve this situation, the UN set goals for the global improvement of water supply in the second development decade in 1971-80 (WB 1976), to be achieved with engineering innovations (c.f. UNESCO 2010). This international discourse importantly influenced the national goals of many developing countries, including Nepal.

⁶ WHO provides guidelines for water quality (WHO 2011) and quantity (WHO 2003), which have been adopted by many countries as a reference to prepare a national standard of drinking water. The Nepal government prepared the National Drinking Water Quality Standard in 2005, accordingly. Annexe 7 provides details on the standard for rural drinking water supply.

Though the first piped water supply system was introduced in Nepal in 1895, it was only for the ruling class (Gyawali & Dixit 2010:239). Even after the plans started in 1956, substantial investments only came later in the sector. Not only did drinking water have less priority in economic development. At that time urban areas were also less crowded and had traditional drinking water systems like waterspouts that were relatively safe. Unlike elsewhere (e.g. US) emerging health problem of urban cities (Schultz & McShane 1978) were not the guiding force for the initiation of a drinking water bureaucracy in Nepal as such. It was the global discourse, indeed, with its focus on piped water supply systems that influenced developments in Nepal.

The third periodic plan was the first to have a separate chapter on drinking water and sewerage. It mentioned investments in drinking water as needed for a healthy environment. Coverage of the rural population by piped water systems was still only 2% and 7% respectively, by the end of the Fourth and Fifth Plan periods.

Until the Third Five-Year Plan period in 1970, the responsibility for drinking water was placed under the public works department, with a focus on constructing water systems in urban areas. From the Fourth Plan period onward (1970-75), drinking water supply was included under the plan heading of 'social service'. The budget allocation for the sector increased then by 3-6% (from 1-2% earlier), because drinking water had come to be considered a basic need (Sharma 2000).

Guided by the international commitment made for the International Decade on Drinking Water Supply and Sanitation (1981-91), government investments in the sector further increased in the Sixth and Seventh Plan periods. These plans set a target of providing piped water supply to 11.83 million rural people. But the target could not be met: by the end of this Decade only 5.93 million people in rural areas had access to piped water supply (Regmi 2000:29). A study conducted by New Era in 1990 claimed poor coordination among sector organizations as an important reason for this poor performance (cited in Ibid).

This led to the formation of the Ministry of Physical Planning and Works (MPPW) in 1988, under which the DWSS was to take the lead in achieving national coverage of the population with piped water supply. Hence, the focus of the DWSS was on the expansion of infrastructure for piped water networks with a design model including water treatment units. This focus on construction was also reflected in the recruitment of human resources in the department.

6.3.2 The staff of the DWSS

The staff composition of the DWSS showed a dominance of civil engineers in two ways. First, the post of DG (formally known as Chief Engineer of the Office) had to have qualifications in civil engineering, under the sanitary subgroup (DWSS 2004). Second, the DWSS had been restructured thrice since its establishment in 1972, - in 1977, 1988, and 2001. Each time, civil engineers remained dominant among the staff and most were men.

Relations among the staff were vertical and based on hierarchical classifications and lines of command. Similar to the DOI, the DWSS staff were classified as *gazetted*, *non-gazetted*, and ‘non-levelled’ staff: *gazetted* first-class formed the highest category, followed by *non-gazetted*, with non-levelled the lowest.

Table 6.4 presents the vertical hierarchy in the organization based on the field study in 2005-2006.

Table 6.4 Classification of DWSS staff

Gazetted 1	Gazetted 2	Gazetted 3
Director General	Senior Divisional Engineer	Engineers
Deputy Director General	Administrative Officer	Section Officers
Superintendent Engineer	Account Controller	Sociologist
	Senior Sociologist (removed)	Chemist
		Microbiologist
Non-Gazetted 1	Non-Gazetted 2	Non-Levelled
Overseer	Assistant Accountant	Drivers
Computer Operator	Kharidhar	Peons
Mechanics	Telephone Operator	Watchman
Driller	Assistant Technician	Sweeper
Electrician		
Accountant		
Nayab Subba/Clerk		
Women Worker		
Technician		
Librarian		
Typist		

Source: Field data, DWSS 2005/06

Both *gazetted* and *non-gazetted* staff posts required personnel people in a technical category. *Gazetted* technical officers were to have at least a Bachelor degree in engineering, non-gazetted technical staff would be overseers and technicians (plumbers).

In 1988, there were 2,164 *gazetted* officers of which 92.7% had qualifications in civil engineering with a specialization in sanitation. There were 1,510 *non-gazetted* personnel, of which 31.32% were overseers with a civil engineering degree. Another 40.79% were technicians, who were responsible for repair and maintenance of the drinking water structures. 5% of the *non-gazetted* technical staff were women workers, responsible for implementing community awareness programmes on sanitation and drinking water (DWSS 1988). Recruitment of women-workers began in 1966 under the guidance from the ADB to implement the Fourth Rural Water Supply and Sanitation Sector Project (FRWSSSP) (see Regmi 2000:103). Since their recruitment was to ensure implementation of sanitation

component of water supply projects that includes promotion of toilet construction and water use practice of better hygiene, they are grouped under *non-gazetted technical category*.

In all, an analysis of the organizational structure and staff composition in 2001, 2006, and 2010 shows little changes in the dominance of civil engineers.

The department was headed by a DG with a qualification in civil engineering with a specialization in sanitation. The DG was supported by two DDGs with the same qualifications (DWSS 2004). Each DDG was responsible for an administrative branch at the central office, a set of technical branches and specific regional offices (and divisions and subdivisions beneath these), as shown in Fig 6.6. The technical sections at the centre had horizontal interactions between them, and were headed by *second-class gazetted* officers, ten of them also in positions of senior engineer.

Within the ten technical sections shown in Figure 6.6, there is one section for ‘NGO and community mobilization’. The relative importance of this section was reflected in the budget allocation. During the field study in 2006, I observed it received the lowest budget. This would limit both its work performance and its visibility.

Only the sections for ‘environmental sanitation and natural disaster management’ had a position for a sociologist. Since 2004 there had also been a position for a senior sociologist, working directly under the DG.

In 2006 at the time of field study, there were five regional offices, that oversaw 43 division and 27 subdivisional offices in charge of implementing water supply projects at field level. Each regional office was headed by a superintendent engineer of *gazetted I* rank, a division office and a subdivision office also an engineer of *gazetted II* rank. Only the division and subdivision offices had direct contact with water users.

In 1988, staff with a technical background made up 64% of all personnel of the DWSS, whereas staff responsible for institutional aspects only 0.05%. In 2001, 1,681 (permanent) staff remained after a restructuring of the DWSS, and the same number was still present in 2006 at the time of the study. Of these, 68% were technical staff, the remainder was administrative personnel. Of the total of 213 *gazetted-officers*, 97% were technical and the rest were administrative staff. Of the total of 1,104 *non-gazetted* staff, 79% were technicians and the remaining were administrative staff. The remaining 364 were support staff such as drivers and peons. At field level, there were 5 regional heads, 53 senior divisional engineers, 80 engineers and 5 sociologists. This meant there were 5 sociologists to work with 143 engineers.

I updated the data in 2010, the total staff were 1,660 (Figure 6.7). Their composition then was no different from 2006. The ‘Others’ category in this Figure refers to *non-gazetted* staff that included women community workers and drinking water (assistant) technicians.

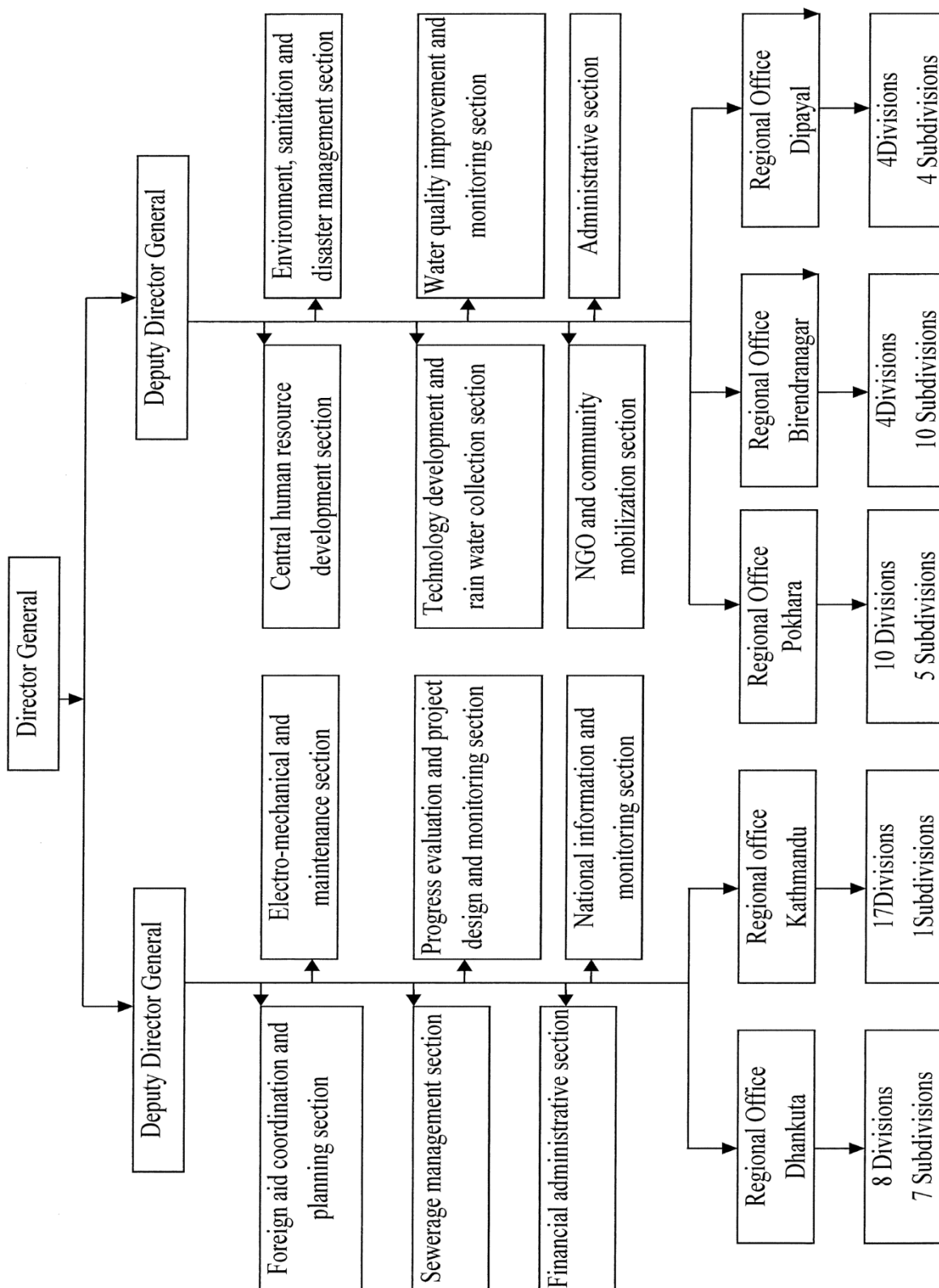


Figure 6.6 Organizational structure of the Department of Water Supply and Sewerage

Source: Field note, DWSS 2006

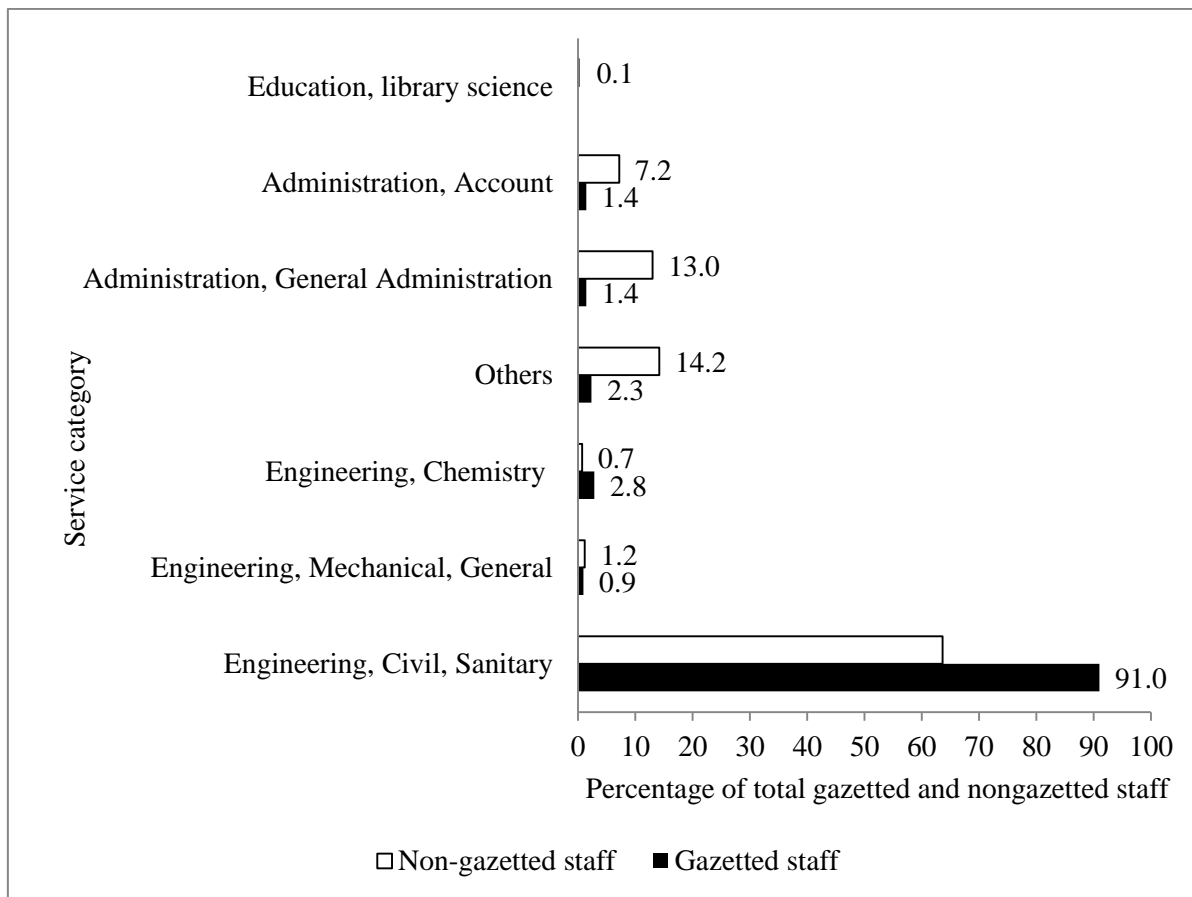


Figure 6.7 Staff composition of DWSS, 2010

Source: Field data, approved staff recruitment detail, Administrative Division, DWSS 2010

Further analysis of staff composition by caste shows that 58% of DWSS staff belonged to hill Brahmin/Chhetri caste groups. Unlike the DOI, the Madhesi dominance was less obvious in the DWSS (Figure 6.8).

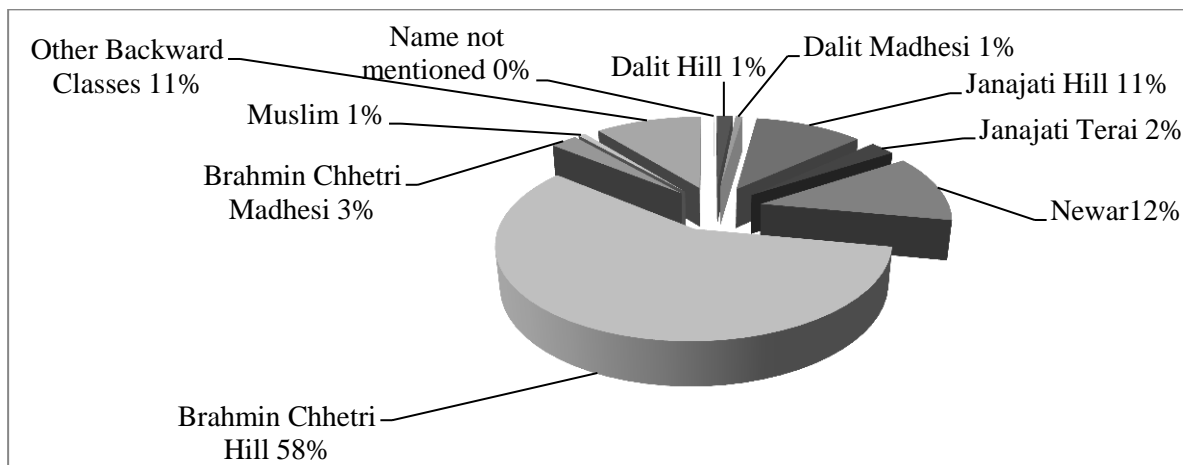


Figure 6.8 Caste composition of DWSS staff

Source: Nijamati Kitabkhana, 2010 (GSEA 2012)

An analysis of the gender composition of staff shows that the DWSS only had a few female officers in higher positions. Of the total staff, 94% were male. The central office, in Kathmandu, had 117 staff in 2006 but of the 35 *gazetted* officers, none were women. Among the 60 *non-gazetted* officers only 7 were women. Out of these, 4 were in administration and accounts, the others were a computer operator, a drafts-person, and a women worker. Among the 22 staff without a rank - which included drivers, peon, sweepers, and security guards -, only 2 were women, a gardener and a sweeper. That meant that of a total of 117 employees only 9 were women, and none of these were at *gazetted* level.

Regmi (2000) pointed out that female staff involvement in the policy domain of DWSS was almost negligible, which - even though there is no direct relation would reduce the scope to discuss and work on gender seriously.

Not only at the level of the DWSS the number of women in sanitation engineering was limited. SOPHEN, the Society of Public Health Engineers Nepal, established in 1990 and located on the premises of the DWSS, had 274 members in 2010 of which only 4 were women. (Udas 2011:122).

Together, the three characteristics described above - a professional identification strongly linked to the construction of water systems; the dominance of men and of members of *Indo-Aryan* caste groups with a strong gender hierarchy and segregation would limit opportunities to think and talk about gender at the work place. In addition, the DWSS staff structure itself showed a strong hierarchy (section 6.3.3).

6.3.3 Hierarchy and influence of Indian water management

A strong hierarchy can be hypothesized to be an obstacle for open communication in an organization. Gender theorists argue that such an organization will have less opportunity to address gender concerns (cf. Iannello 1992; Ely & Meyerson 2000).

Like the DOI, the DWSS was found to be modelled after the Indian water management model that, in turn, had been shaped by colonial water management traditions. The first water supply system in Bombay, India, had been built by the British during the colonial period (Broich 2007).

Many Chief Engineers and DGs of the DWSS who were/are civil engineers were educated at Indian universities. Data from 1972 to 2006 indicate that seven out of the ten Chiefs of the DWSS had received their Bachelor's in civil engineering from Indian universities (Table 6.5).

The DWSS designed their piped water supply schemes as river diversion structures or a ground-water pump infrastructure. During the field study in Udayapur, I observed that almost all piped water supply schemes had headwork problems at least once, after construction. In the ADB funded drinking water project at Beltar VDC, in Udayapur, the village had developed its own piped drinking water supply scheme from a local well to serve 25 households, after the scheme constructed by DWSS failed after damage by flash floods. An

ADB report on designs for rural drinking water systems raised concerns about the sustainability of piped water supply schemes implemented in hill areas affected by floods (ADB 1997), questioning the suitability of the design. The continued prominence of specific designs, even when not particularly suitable, illustrates the influence of professional training (and culture-based inclination) with respect to what DWSS officers would do.

Table 6.5 Educational background of the Chief Engineer/Director General of DWSS (1972-2006)

Tenure	Years of service	Bachelor of Engineering Degree
1972-81	9	Bihar Engineering College, India
1981-85	4	Bihar University, India
1985-86	1	Calcutta University, India
1986-90	4	University of Roorkee, India
1990-94	4	Jadavpur University, India
1994-98	4	Institute of Technology, Banaras, India
1998-99	1	Belgrade University, Yugoslavia
1999-01	2	Peoples' Friendship University, Moscow
2001-03	2	N.A.
2003-04	1	Peshawar University, Pakistan
2004-06	2	Bengal Engineering College, India

Source: Field data 2008, Nepal Engineers Association (NEA), Nepal

In addition, the Indian engineering education had brought in a hierarchical culture that had added to the hierarchical structure of the DWSS orientation already discussed.

6.3.4 Vision, mission, and goals

Two documents defined the vision of the DWSS: the National Water Strategy, 2002 and the National Water Plan, 2005. The goals set in these plans were reflected in the National Water Supply and Sanitation Policy 2004. According to these documents, the Nepal government aimed to increase the population covered by safe drinking water and sanitation, to have full coverage of drinking water and sanitation services by 2027. The National Water Plan 2005 adopted a strategy to prioritize increasing water supply coverage, even at basic levels, with each successive plan period setting targets and strategies to reach this goal. For example, the Three-Year Interim Plan (2007-2010) targeted to achieve drinking water coverage of 85% compared to the earlier 77% (GON 2007a:29).

However, sanitation coverage at the time of study remained only 20% and 25% in rural and urban areas respectively, despite the ten five-year plans. These figures alarmed both the government and donors, and also poorly reflected the progress the Nepal government had achieved till then. The Colombo Resolution of South Asian Association for Regional Cooperation countries had set a target of sanitation of 25% by 2001/02 (HMG 2001:45), which could not be achieved. The targets of the National Water Plan were related to the

achievement of the Millennium Development Goals (MGD) and upgrading of the Human Development Index.

The DWSS was the government organization responsible to achieve these targets, which also importantly shaped its mission and goals. Consequently, it had become the organizational intention of the DWSS to be the facilitator and implementer of programmes increasing the population with access to safe drinking water.

It was doing this mainly through designs of centralized pipe water supply systems that had a water reservoir with basic or advanced water treatment and sanitation facilities.

The importance of cost recovery appeared in drinking water documents, but in a rather different way than in irrigation plans. Drinking water policies discussed possible mechanisms of cost sharing, which was related to the fact that the government considered drinking water a basic right (HMG 2002b:xiii), and linked improved drinking water supply to improving living standards and well-being. As a consequence, drinking water and sanitation became defined as social objectives, more than as economic objectives.

According to a government directive, users in rural areas were to contribute first only 20% of the capital cost, in addition to bearing the full costs of repair and maintenance of drinking water systems. Over time, they were to bear capital costs fully also.

So, on the one hand, the term ‘cost sharing’ had appeared in documents. On the other, the intentions of the DWSS ultimately were to implement water projects in such a way that users’ organizations would start collecting water fees to meet both investment and operating costs. So, though formulated as a social objective and articulated in different terms (cost sharing instead of cost recovery), in practice drinking water systems were deemed even less eligible for public support than irrigation systems.

To conclude, the vision of the DWSS was to expand water supply systems, and to promote designs and technology that would help meet international quality standards for potable water. It set out to manage water programmes in such a way that the beneficiaries would ultimately bear the costs of construction and management. The Rural Water Supply Policy and Strategy 2004 had proposed that the role of the DWSS, over time, would be that of a facilitator, monitor, and coordinator in the sector, rather than one of a direct implementer. Yet the primary activities of division and subdivision offices at field level continued to be the implementation of larger projects (as seen during the study period in 2004-2006).

6.3.5 Staff evaluation and monitoring: formal incentives

The staff evaluation system of the DWSS was similar to that of the DOI. Section 6.2.5 showed that in the DOI there was no formal monitoring or assessment of an officer’s ability to achieve a minimum participation of women users’ in WUAs as directed under the policy. However, in the DWSS, where drinking water development was implemented through

projects, officers did have to report to the project management offices on women's participation in users' committees.

For example, the Fourth Rural Water Supply and Sanitation Sector Project (FRWSSSP) funded by the ADB had guidelines for the preparation phase that included a specific statement on the involvement of at least two women officers had to report about (see Box 6.1).

Box 6.1 DWSS/ADB Directives for social preparation

Criteria to select sub-projects under FRWSSSP

- Hardship and felt need exist in the area due to lack of adequate safe drinking water.
- *Formation of WUSCs represented by at least 2 females.*
- Commitment by users to participate actively in the process of sub-project planning through implementation such as voluntary labour contribution, establishment of a maintenance fund, construction of latrines, and undertaking the responsibility of O&M upon commissioning.
- Signed letters of commitment by users committee resolving water rights dispute, if any, for proposed sources.
- Village Maintenance Worker and sanitation motivation should be nominated and their names have to be provided.
- Commitment to provide required land free of cost to construct the sub-project structures and facilities.
- Land and water right disputes affecting the sub-project must be resolved by the WUSC/beneficiaries.
- Commitment to pay the required water tariff by the beneficiaries as per financial analysis.
- Evidence of deposit of Rs. 1000 per tap stand, by the community for O&M fund
- Submission of Focus Group Discussion Session (FGDS) forms- Village Profile and Health Status information forms filled up by the surveyor conducting mass meeting and discussion with the users.
- Social map prepared in conjunction with users has to be provided.
- Project should be economical, simple in design and technique, and easy to operate and maintain.
- Environmental and social factors are to be considered in the design work.
- Subprojects are selected as per priority order prepared by DWSO and approved by RPMO.
- Per capita cost should be reasonable.

Therefore, it can be concluded that the effectiveness of the policy implementation to improve women's participation in WUAs is partly related to the demands of a specific project. This, sometimes, included procedures to evaluate the ability (or success) of implementing officers in encouraging women members in user committees. This of course, did not guarantee the institutionalization and longer-term sustainability of addressing gender goals.

Field research showed that all (seven) projects implemented under the FRWSSSP in Udayapur district had achieved at least two women (i.e. 20% of the total WUA committee

members) in most of their WUA committees, as the programme required. However, national data from 2010 show there was only 11.3% women’s representation in WUA committees on average (GON 2011b). This is suggesting that the lack of formal incentives and project guidelines made female membership in committees a nominal affair, at best. The overall lack of formal incentives to implement gendered policy clauses undoubtedly also weakened the possibility to discuss and work on gender issues in the DWSS: officers were simply not rewarded for working on gender.

6.3.6 Dependency on foreign aid and grants

Another important feature that the DWSS shared with the DOI was its dependency on foreign aid and grants. Figure 6.9 shows the trend of foreign grants and loans in the drinking water supply budgets from 2002 to 2008. The grant amount is declining, whereas the loan amount is increasing.

India was the first to invest in the DWSS followed by the UNICEF and Helvetas, both supporting community drinking water supply projects in the early 1970s. Multilateral donors such as the UNDP, UNICEF, and ILO started their engagement in the sector after the 1970s. The World Bank (WB) was first involved in 1974 to support urban projects in Kathmandu and Pokhara, whereas the ADB has been involved in the promotion of rural water supply since 1984 (Sharma 2000). At present, the WB, ADB, and the UK-based DFID are the major donors of the sector.

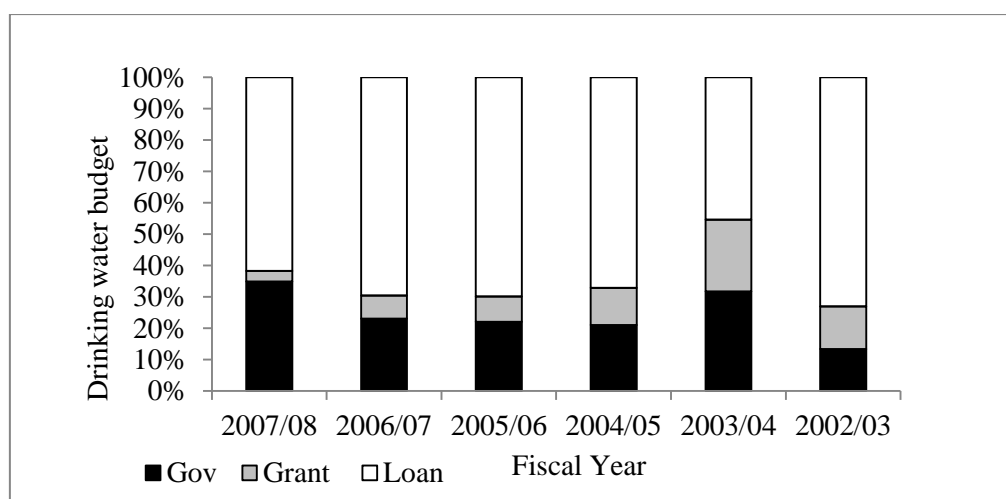


Figure 6.9 Share of grant and loan in the drinking water budget

Source: Red Book of respective year, Ministry of Finance, Nepal Government

About half of the DWSS budget came from grants and loans. In 1998, the share of foreign investment was 48.5% (HMG 2000). In 2004, the share of foreign loans was 31% and that of grants was 23% (HMG 2004). This modality of financing makes DWSS highly dependent on and accountable to external resources for its functioning.

Most donor-funded programmes were operated as projects, with their own mandates and operational procedures. For example, from 1984-85 to 2001-02 the ADB implemented rural water supply projects worth 65 million dollars. A special project management team supported by consultants managed the projects undertaken by the DWSS with its district offices (Ockelford & Shrestha 2002: 38).

The positions of sociologist and women workers were created in the DWSS in 1986, under the direct influence of this ADB project.

Such dependency and donor influence does not allow for critical thinking among DWSS staff, which may also limit the scope to work effectively on gender issues.

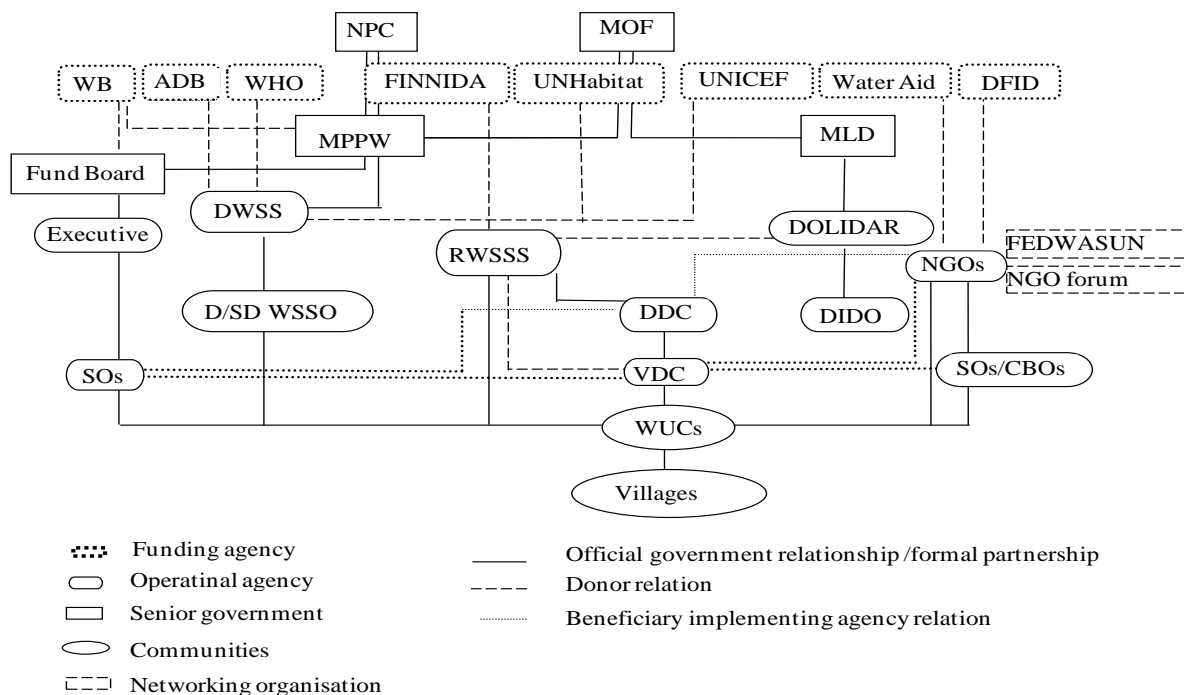
6.3.7 Involvement of multiple actors and competition

Compared to irrigation, many more actors in Nepal are involved in implementing drinking water programmes. These include the Rural Water Supply and Sanitation Fund Board (RWSSFB), the Department of Local Infrastructure and Agriculture Roads (DOLIDAR), and many national and international NGOs. Helvetas and UNICEF were international NGOs that initially provided grants to construct drinking water systems. Before 1988, they worked with the Ministry of Local Development and Panchayat (MOLDP). The RWSSFB initially was a semi-autonomous body that was specifically established to implement WB assistance in the sector (1993-96). In 1996 it was incorporated into the government structure, on account of its success (HMG 2004).

In 1988, while all programmes implemented by line agencies were brought under the DWSS, the government established DOLIDAR. The idea was that the DWSS would implement bigger water supply projects, while DOLIDAR would take care of smaller ones. Donors such as DFID and Water Aid instead preferred implementing drinking water and sanitation projects through local NGOs, such as the national-level Nepal Water for Health (NEWAH) agency. After the decentralisation policies put into effect by the Local Governance Act, implementing powers were devolved to DDC. The presence of these multiple actors created a competitive environment, with organizations struggling for projects.

Figure 6.10 gives an overview of multiple actors in the sector.

One important reason for new actors to emerge was that the DWSS was deemed ineffective (by funding and loan agencies) in dealing with and mobilizing communities, because of its strong engineering orientation (ADB 1997). The large number of actors involved in the sector negatively affected the budget of the DWSS, with the percentage that the DWSS used to receive of the total budget for drinking water and sanitation (DWS) reducing over time, whereas the percentage share of the DWS sector budget in the national development budget had slightly increased over time (Figure 6.11).



WB- World Bank, ADB- Asian Development Bank, WHO- World Health Organization, NPC- National Planning Commission, FINNIDA- Finnish Aid, MOF- Ministry of Finance, DFID- Department for International Development, MPPW- Ministry of Physical Planning and Works, MLN- Ministry of Local Development, D/S/WSSO- Division and subdivision Water Supply and Sewerage Office, RWSSSP- Rural Water Supply Sanitation Sector Project, DDC- District Development Committee, DOLIDAR- Department of Local Infrastructure Development and Agriculture Roads, FEDWASUN- Federation of Drinking Water Supply Users Nepal, NGO forum – NGO forum of urban water supply and sanitation

Figure 6.10 Actors in the drinking water supply sector

Source: updated from Ockelford & Shrestha 2002

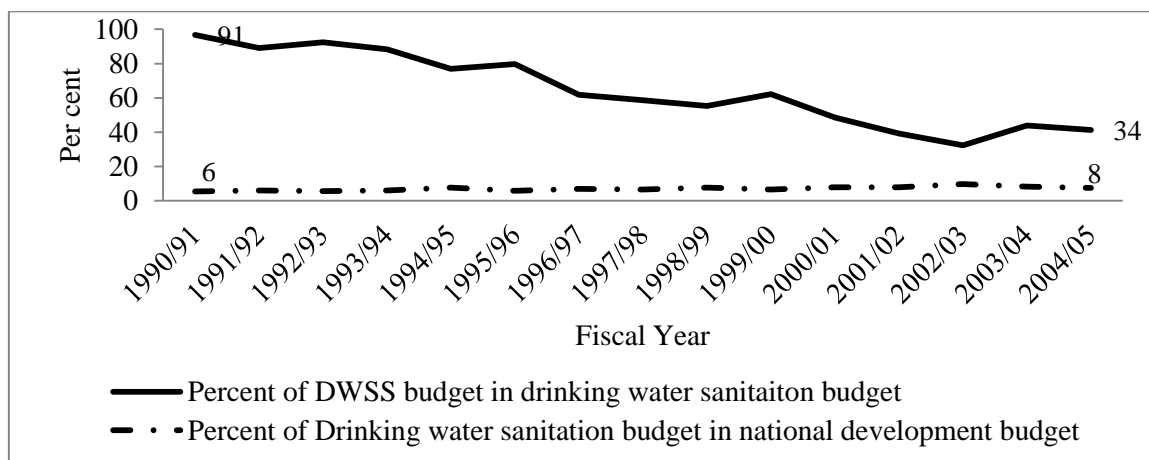
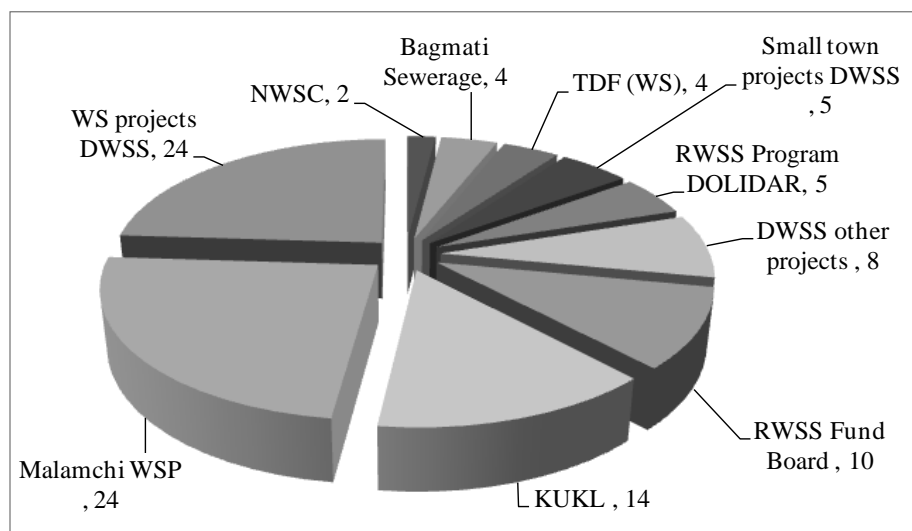


Figure 6.11 Trend of drinking water sanitation budget and DWSS budget

Source: HMG 2004

In 1990, the DWSS still was the leading organization to implement drinking water programmes and shared 90% of the DWS sector budget, whereas in 2004 its share was only 35%. This shows that the remaining DWS sector budget was allocated to other agencies.

I further scrutinized the DWS sector budget in 2011 and the allocation to the DWSS. It received a share of 37% then (Figure 6.12). The budget for water supply projects implemented by division and subdivision offices was 24%. The rest was allocated to projects and programmes for urban water supply, such as the Melamchi water supply project and the town development fund (TDF). While explaining the changes in budget allocation, an officer in the planning section voiced his grievance about the difficulty for the DWSS to lead this sector due to a lack of budget.



Note: RWSS- Rural water supply and sanitation, WSP- water sector project, TDF- Town development fund, KUKL- Kathmandu Upatayka Khanepani Limited, NWSC- Nepal Water Supply Corporation

Source: Planning Section, DWSS 2011

Figure 6.12 DWSS budget as a percentage of the total DWS budget, 2011

6.3.8 A struggle for existence

Although the DWSS was supposed to be the leading government agency in the drinking water and sanitation sector since 1988, the above noted mergers and the emergence of new actors have brought changes.

A section head of DWSS in 2012 explained:

'The government visualised us as a leading organization in the sector. Recently we were placed under the Ministry of Urban Development (due to the sharing of ministries among politicians). We are in a dilemma about how we can lead the sector when placed under the ministry of urban development. Does it allow us (DWSS) to address the issues of rural Nepal?'

- Field note, officer, DWSS, 2012, Kathmandu

Before 1988, two government agencies implemented drinking water programmes: the MOLDP implemented systems covering less than 1500 people; the DWSS covered all other rural drinking water systems. These were merged in 1988 to make the DWSS the only government agency to implement drinking water programmes. At this time, urban water supply was managed by the National Water Supply Corporation (NWSC).

To provide rural services, the DWSS expanded its organizational structure to all 75 districts by establishing district water supply and sewerage offices.

The early 1980s was a landmark in the water supply and sanitation sector. Community drinking water supply programmes gained an added social component of ‘awareness on sanitation.’ This was the result of the global effort of the WHO, and the International Decade for Safe Drinking Water Supply. A midterm review of the Decade reported the inability of the DWSS to attend to sanitation and health awareness due to its primary focus on construction. The report recommended involvement of civil society, NGOs, and communities, highlighting the lack of relevant human resources at the DWSS (Sharma 2000). Through affiliation with the Social Services National Coordination Committee, many organizations entered the DWS sector. In 1987, the international NGO Water Aid promoted the national NGO NEWAH, with support in 1992 that ran for more than a decade. Within the DWSS, an NGO coordination committee was established, and the DWSS drafted NGO coordination guidelines and a policy about them.

The director of NEWAH said:

‘Engineers and technician’, who make the core team among the implementers at DWSS, welcomed involvement of NGOs in water and sanitation activities as their awareness raising and social mobilization activities were not directly linked to their work (professionalism) of construction.’

Field data, Personal communication, Director, Newah, 2007, Kathmandu

The Eighth Plan specified that 60% of targets in the drinking water sector and 54% of targets in the sanitation sector should be achieved through the execution of programmes by NGOs, private sector entrepreneurs, companies, and local bodies (Shrestha & Sharma 2001:32). Finally, a policy on participation of NGOs in water supply and sanitation programmes was formulated in the DWSS in 1996 that allowed for the selection of NGOs to mobilize communities and implement sanitation activities. The idea was that the DWSS would construct the system, while the NGOs would work on community mobilization. This maintained the normal professional approach of the DWSS as construction-oriented.

In 1993, the WB concluded there were major shortfalls in the level and quality of service coverage. It argued that the institutions (indicating MPPW and DWSS) created to serve the public in water supply had not been responsive to customers’ needs, and that sustainability

was not being achieved. It considered there was little prospect for changing the way the DWSS operated by investing directly through its service delivery procedure, so it proposed alternative institutional arrangements (Ockelford & Shrestha 2002). As a result, the WB refused to work with the DWSS to implement rural water programmes.

A pilot project with the acronym JAKPS (Janata ko Khanepai ra Sarsafai Karyakram - 'People's water supply and sanitation programme') was launched. It was financed by the UNDP and a Japanese Grant Facility and executed by the WB for a period of three years, 1993-95. It involved the private sector and NGOs in implementation. In 1996, the WB decided to continue this form of delivery; accordingly, the RWSSFB was established to continue this work. Thereafter, the WB has been the major funding agency of the RWSSFB (known as the Fund Board) that works all over the country.

During an interview with a water expert he remarked:

'The WB created the Fund Board as a step-brother of DWSS.'

- Field note, personal communication, founder NWCF, 2007

An officer at DWSS mentioned:

'I would not like to name a person who initially worked in DWSS, later in the World Bank. I do not know why, he became so negative about DWSS, if possible he would have liked to completely wipe out DWSS.'

- Field note, personal communication, officer DWSS, 2010

Though not openly spelled out in any document, the people who criticized the DWSS complained about the inactive and corrupt nature of DWSS staff. Often, civil engineering construction work was criticised for mishandling of budgets and taking commissions from contractors (Sohail & Cavill 2006; Shrestha 2007). Once I conducted a focus group discussion with students of the Bachelor degree on Civil Engineering course at Pokhara University to understand their professional aspirations (in 2008). A student explained the meaning of CIVIL (in 'civil engineering') to me as 'Corruption Is Very Important in Life'. They argued that mishandling of some funds was okay while constructing structures, considering the high fees they paid to get the engineering degree. Such informal day-to-day talks about corruption among civil engineering students suggest indeed the existence of a professional culture in which bribery is tolerated.

The ADB, one of the lending agencies of DWSS since 1984, also questioned the engineering face of the DWSS:

'Several factors have affected the sector development....one of the many factors is DWSS being an essentially engineering-oriented organization responsible mainly for implementing (constructing) projects but not for their sustainability.'(ADB 1996:2)

At the same time, the ADB also recognized the flexible nature of the DWSS to adapt to change. This was in the same report, which highlighted why ADB should continue working with the department:

'The DWSS has proved to be a strong engineering organization, adaptable to change, its emphasis on community development in recent years is evidence of its adaptability.'
(Ibid.)

Accordingly, the ADB proposed the urgent recruitment of women workers in the department for community mobilization, especially to incorporate women's needs in the project (Regmi 2000). Guiding notions for this recruitment were that women workers would be able to approach rural women in the private domain, address women's practical needs, and involve female users in sanitation activities for an effective project implementation. Consequently, engineers and technicians were to construct systems and to train users on technical aspects of system management. Encouraging women users was the primary responsibility of women workers.

Accordingly, DWSS did appoint women workers in all district offices. In addition, a gender expert was appointed for eight years to mainstream gender in the Third and Fourth Rural Drinking Water Supply Projects.

Figure 6.13 provides an overview of timeline changes in DWSS approach and strategies to cope up with the changed approach.

The third and fourth RWSSSP adopted intensive implementation procedures to involve communities and interact better with them, especially women, in projects.

The gender expert of the ADB funded project commented:

'I believe having token women in the committee is not enough, though ADB keep emphasising on women's visibility in committee. Women's empowerment depends on the information women receive. So we designed a step-wise programme implementation procedure to reach women. Many engineers find it tedious to follow the procedure.'

-Field note, personal communication, Gender Expert, Third and Fourth RWSSSP, 2006

Evaluation of ADB funded programmes indicated two things: Community involvement was emphasized both in the documentation for the first project (1984-1993) and for the second (1989-1995). Yet, real community involvement, along with some involvement of women, was only achieved in the third project (1992-1997). Only the project documents of the fourth project (1997-2002) show more concern in terms of inviting women's participation in various project activities (Regmi 2000; ADB 2004).

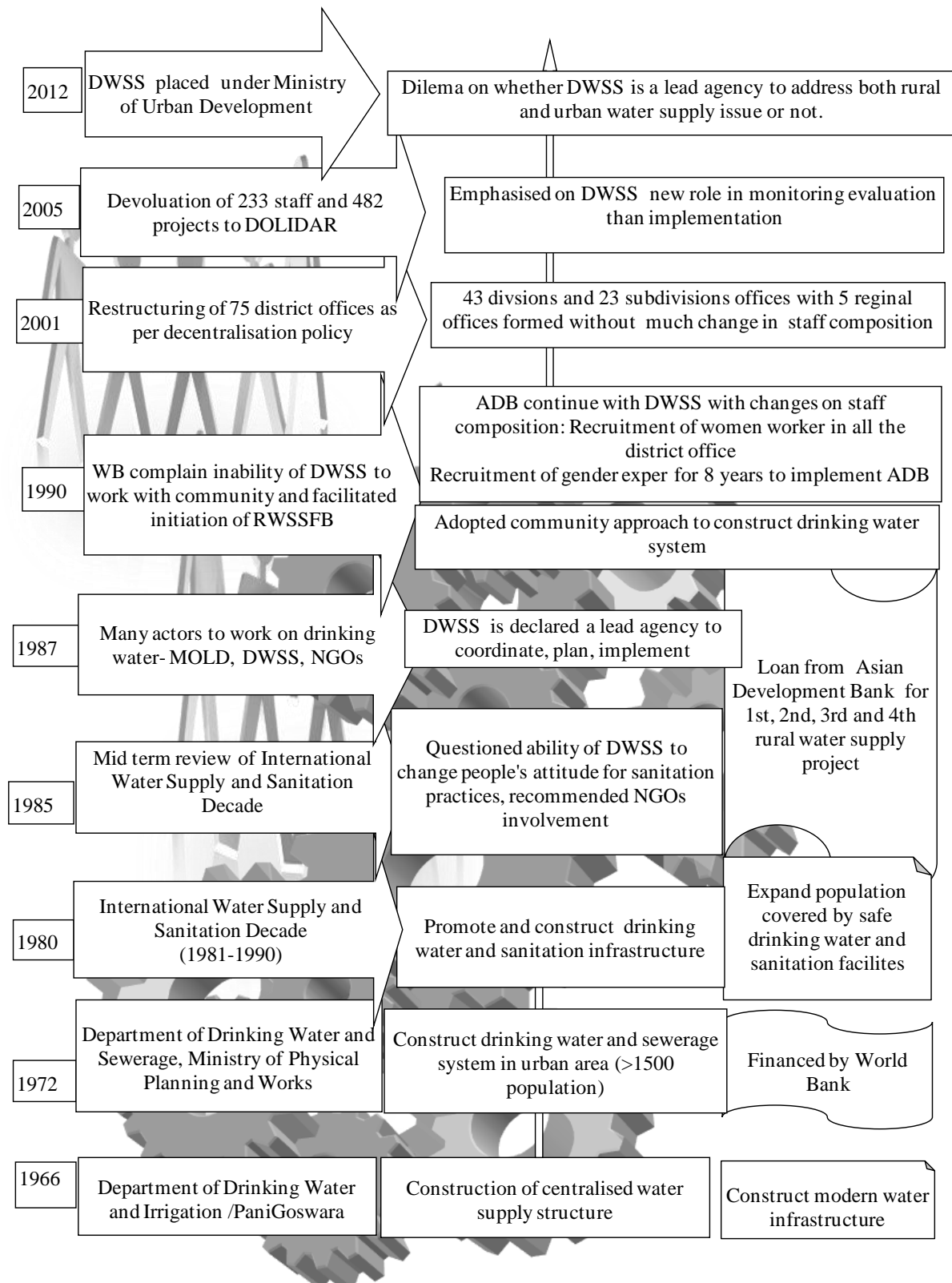


Figure 6.13 Overview of the DWSS and its changing approach in programme implementation

Source: Field study, (2004-2006)

In 2001, part of the DWSS was restructured, given the devolution of power to the local authority following the Local Governance Act. Some tasks and projects were now to be channelled through DOLIDAR at the Ministry of Local Development. Table 6.6 shows the number of projects and staff that were transferred from the DWSS to DOLIDAR according to the decision of the National Planning Commission in 2005, including both temporary and permanent staff. This was guided by the Rural Water Supply and Sanitation Strategy, 2004.

Table 6.6 Project and staff transferred to DOLIDAR from DWSS, 2005

Development Region	No of Projects	No of Staff
Eastern Development Region	86	35
Central Development Region	123	77
Western Development Region	122	46
Mid-Western Development Region	84	30
Far-Western Development Region	67	35
	482	223

Source: Field note, Planning section, DWSS 2006

This reduced the size of the DWSS and its role in implementation. In 2012, the DWSS was placed under the newly formed Ministry of Urban Development (MUD) instead of the MPPW. The name MUD was contradictory with the engagement of the DWSS in rural water supply and its earlier lead role. According to an officer, a high-level team of the DWSS then proposed to revise the name of MUD to Ministry of Urban, Physical Development and Drinking Water so that the DWSS could still claim its role as the apex body of the government on drinking water.

To clarify its role in implementation, the DWSS published a white paper that showed all areas where it implemented drinking water programmes in three districts of the Kathmandu Valley, including VDCs.

This review shows that the DWSS had been blamed for its lack of sensitivity to community involvement and for having a dominant technocratic character, similar to the DOI, especially by its donor agencies. However, unlike in the irrigation sector, this criticism led to the emergence of many new actors involved in drinking water and sanitation projects. As a result, the DWSS now competes with many players working all over the country.

The Department has had to cope with many changes in government approaches, shifting from a techno-centred construction orientation to a socio-technical people-centred approach. It did this by recruiting (some) women workers, sociologists, and gender experts and establishing an NGO coordination section in the department. The drinking water policy 2004, envisioned the DWSS as a facilitator rather than an implementer. However and perhaps because it had to compete with others in acquiring projects and to struggle to maintain its identity, the majority of the staff are still civil engineers and men.

To conclude, the DWSS struggles for its existence seem to have prompted it to maintain its normal professional character based on a strong engineering and construction orientation. In this normal professional culture, the space to think about and work on gender has been limited.

6.4 Conclusion

In this chapter I have described the (history of the) water bureaucracy in Nepal and analysed what shapes the informal and formal space to discuss and work on gender at the department of irrigation (DOI) and the department of water supply and sewerage (DWSS). For this, I examined what constitutes ‘normal professionalism’ in both departments. My analysis shows that in both departments, there was a continued dominance of civil engineers. Both defined their mission and work primarily in construction terms. They thus shared a strong focus on infrastructure and technology, and a similar vision of expanding the coverage of water systems in the country. Both departments have very few staff to work on the institutional aspects of water management. Their organizational structure is very hierarchical, with vertical lines of command.

Both departments also strongly depended on donor funding and loans, with much of their work being implemented in project modes. Rather than being (held) accountable to the Nepalese constituency or to the water users who are served by their systems, the dependency on donor funding also made that the departments were primarily accountable to these foreign donors and lenders. Attention to gender and women, and the rule to improve the participation of women in WUAs, had partly emerged on the agendas of both departments because of donor agendas and conditionalities.

The implementation and operationalization of these policies also importantly depended on the specific procedures and guidelines of projects, and was hardly institutionalized within the formal procedures and structures of the departments. For instance, the formal personnel evaluation and monitoring procedures in both departments did not include any criteria to assess whether and how well staff dealt with gender quota.

For the DWSS, donor dependency had also created threats to its very existence, as the dissatisfaction of many funders with the effectiveness and mode of operation of it made them search for (and sometimes create) alternative implementing organizations.

In sum, the prevailing working structures and cultures of the DOI and the DWSS provided very limited possibilities to think and talk about gender. There was no institutional reward for doing so, and there was a strong tendency to delegate ‘gender questions’ (along with other social questions) to less appreciated and under-budgeted management divisions and social scientists.

Chapter 7: Doing Gender in an Irrigation Context

Implementers at the Department of Irrigation

'If women themselves are not interested, we should not force them to be on the committee.'

- Subdivision Head, Udayapur subdivision office, 2004

'The quota policy can change the dominant gender practice.'

- Next Subdivision Head, Udayapur Subdivision Office, 2005

The quotes above summarize the views of two heads of the Subdivision Office for Irrigation in Udayapur district, recorded during my fieldwork in 2004-05. They show their different responses to actions prescribed by government policies to encourage women to become members of WUA committees.

In this chapter I record and analyse the activities and views of DOI officers and their office environment, looking at how they deal with gender in what I call their day-to-day work. The chapter aims to answer three functional questions- what were irrigation implementers doing, why did they do this and how did they do it?

The sections, in turn, look into irrigation offices at three levels: the Subdivision Irrigation Office located in Udayapur, the Regional Irrigation Office of the Eastern Development Region (EDR) at Biratnagar, and the central irrigation office of the DOI in Kathmandu Valley in Lalitpur district.

By the time of the field study in 2004-05, the DOI had restructured to form 26 divisional and 20 subdivisional offices after merging some district-level offices, to facilitate its management and monitoring roles. Policy and programme-wise, by this time the DOI had gained experience with the SISP project (1996-2002), working with sociologists and community-based organizers (Association Organizers, AOs) on participatory irrigation management. Also, the CMIASP project was underway (planned from 2004 and financially in effect by 2006) with its focus on social development and community-level preparation of plans in which NGOs were also involved. This way, the DOI staff were working with a more diverse set of external actors, including NGO and consultant staff. This, as ADB (2009) noted, created confusions on roles and responsibilities and slowed achievements, and staff themselves had to work through the issues that multi-actor collaboration raised for them (see section 6.2).

The Udayapur Subdivision Irrigation Office in the EDR worked in coordination with the regional irrigation office located in Biratnagar and the irrigators in the Udayapur district. This office was one out of nine irrigation offices in the EDR. Some subdivision offices were responsible for two districts, but the office in Udayapur was only responsible for programme implementation in one district. Table 7.1 presents the division and subdivision offices in the EDR. The minimum requirement for someone to head the division office was that of *Gazetted Second-Class*, whereas for the subdivision office it was *Gazetted Third*.

Table 7.1. District-wise responsibility of irrigation offices at EDR

Districts	Division/Subdivision office
Okhaldhunga and Solukhumbu	Subdivision office Okhaldhunga
Bhojpur and Sankhuwasava	Subdivision office Bhojpur
Taplegung and Pachthar	Subdivision office Pachthar
Udayapur	Subdivision office Udayapur
Khotang	Subdivision office Khotang
Dankuta and Terhathum	Division office Dankuta
Saptari and Siraha	Division office Saptari
Sunsari and Morang	Division office Sunsari
Jhapa and Ilam	Division office Jhapa

Source: DOI 2005

7.1 The Subdivision Office, Udayapur

At the time of the fieldwork, an Irrigation Subdivision Office typically implemented 5 to 8 projects in a year. In 2004, the DOI had approved five projects for the Udayapur Subdivision Office. After project approval, an agreement between a WUA and the subdivision office had to take place. This agreement included the implementation modalities of cost sharing, the initial deposit of funds by users, the formation of the different committees at WUA level to carry out the construction work, and subsequent institutional development. An AO was responsible for the facilitation of the correct implementation of official procedures by a WUA, whereas overseers were in charge of the construction activities.

So, the Udayapur Subdivision Office on the one-hand implemented the projects approved by the central authority, and on the other also collected requests from users to support new irrigation projects for the coming year. Irrigators eager to get support had to forward their request to the office, in the process organizing themselves as a users' association (WUA).

There was competition between the Irrigation Subdivision Office and the District Infrastructure Development Unit (DIDU) at the DDC about who was better in constructing systems.

The DIDU's brief to implement development infrastructure had come to include irrigation after the enactment of the Local Governance Act 1999 and the restructuring of District Irrigation Offices to form (Sub) Division Offices. The intention of the Act was for the central department to take on more of a monitoring role, so that local government bodies could take on responsibilities for local development, including the construction of systems.

Many of the staff at the DOI, who used to work under a Chief Engineer, did not like the idea of transfer to the DDC, where they had to work under a local politician instead. The DDC office and the irrigation office were located on different premises. DOI staff members who preferred the older structure were keen to display their implementation skills, hoping these would compare favourably to the work done by the construction cell of the DDC. Though a major shift of staff from DOI to DDC had not happened at the time of field work, I could observe the tension between the two offices. This competitive context partly formed the day-to-day actions of staff described here, also showing how they dealt with the policy directive to improve women's participation in users' organizations.

Table 7.2 presents the staffing levels and ranks at this Subdivision Office at the time of the study, showing 15 positions with one vacant: One Assistant Engineer (AE), five Overseers, and an Association Organizer (AO) who assisted a 'Chief Engineer', the head of the office. The Chief Engineer was answerable to the Regional Irrigation Directorate for the overall functioning of the Subdivision Office, including programme implementation and financial management. The assistant engineers and overseers were to implement construction work, in collaboration with WUAs. The association organizer was responsible for providing assistance in the formation of WUAs, and for guiding the evolving WUA with the official procedures during project implementation.

Table 7.2 Staff composition in Subdivision office, Udayapur

Post	No	Sex
Chief Engineer	1	Male
Assistant Engineer	1	Male
Overseer	5	Male
Accountant	1	Male
Clerk	1	Female
Association organizer	1	Male
Peon	4	Male
Typist	Vacant	
Field assistants	2 <i>Fajil</i>	

Source: Field study, DOI Subdivision office, Udayapur 2005

In this particular office, only one position – that of a clerk - was occupied by a woman, the others were men. One typist position was previously held by a woman, but the post was vacant after her transfer. Beside these 15 positions, the post of field assistant was not a regular

post: rather these were staff under the so-called farm irrigation programme that used to be a programme of the district Agriculture Office (under FIWUD in the Ministry of Agriculture). After this programme ended, the staff position was allotted to the local irrigation office under the category of *Fajil* (meaning a paid position without a job description considered as a position for future programme needs).

In 2004-5, the office was affected by the national people's movement that had started in 1996. The Home Ministry had declared the district a C-grade conflict affected area (SATP 2011). There had been incidences of bomb blasts, killings, and kidnappings of officers by the Maoist rebel groups in the district (Chandrasekharan 2004; Pathak 2005; SATP 2011). At the time of the field study, two bombs were placed by rebels in the District Headquarters. Also, a red flag was observed along the Baruwa River. It was placed there by the Maoists to indicate that the right bank belonged to the government whereas the left bank belonged to them. So, the bomb blasts and this use of flags served to mark a symbolic territorial divide between the rebels and the government. The FM radio run by the Maoists broadcast every Wednesday, with many people in the area listening to it, often trying to hide this from the District Administration. Everybody –local people as well as officers - were insecure, tense, and under stress because of the conflict.

The Maoist actions also affected the functioning of the Udayapur Subdivision Office. The Royal Nepal Army had set up camp in the guardhouse and storehouse of the office, to protect it from possible attacks, as well as to protect the army camp located opposite the office, on the other side of the main road in Gaighat. Another security measure was that government officers had to report to the Chief District Officer about their mobility. Two engineers, one a chief of the office and the other an assistant engineer I met in September 2004 (further named Mr E1 and E2) were preparing to get a transfer from the district, as they found the work environment discouraging. The AO of the office, a native of Udayapur (further named Mr S) and member of an elite caste group, was extremely reluctant to visit the field as there had been incidents of kidnapping of members of the elite by rebels. Fears of attacks resulted in absenteeism as well as inactivity among staff.

The rebels' attempts to paralyse the government also had implications on the budget flow, and the budget release for the year 2004-5 was delayed. This delay was an additional reason for the inactivity of staff.

November 2004, two months after I arrived in the area, engineers E1 and E2 had succeeded in getting transferred and a new Chief Engineer (further named E3) joined the office. E3 had implemented large irrigation projects in the Terai. His transfer to the conflict-affected area might have been related to his ability to handle challenges and his experience. He was higher in rank than gazetted-third, the minimum required rank to head a subdivision office. By the time E3 joined the office, the budget had been released. So he was keen to begin implementation, also because his performance evaluation depended on it. Initially, his staff did not cooperate given their reluctance to go to the field.

As part of my examination of the linkages between professional identities and efforts to promote women's participation, I looked at how the wider social context shaped (dis)incentives to promote the gender components of policies and integrate them with professional attitudes of engineers.

Except for 1 person, all 14 staff at the Udayapur office at the time of the field study had their homes outside the district. Only two staff lived with their families, a female storekeeper whose husband worked at the district government office, and the AO (Mr. S). All other staff members were married and lived in the district without their family members.

These staff from outside the district believed:

'Bringing one's family into this workplace is not beneficial considering poor educational facilities for children and the low levels of security.'

Triyuga Municipality, the district headquarters of Udayapur district, had facilities at only one level above a VDC. Figure 7.1 sketches opportunities and challenges faced by staff working at this level, compared to those working at regional and central offices.

At regional and central offices, staff have chances to improve their skills through their involvement in diverse activities and trainings. They also have better facilities for their family members. At subdivision level, the challenges could be more than the opportunities.

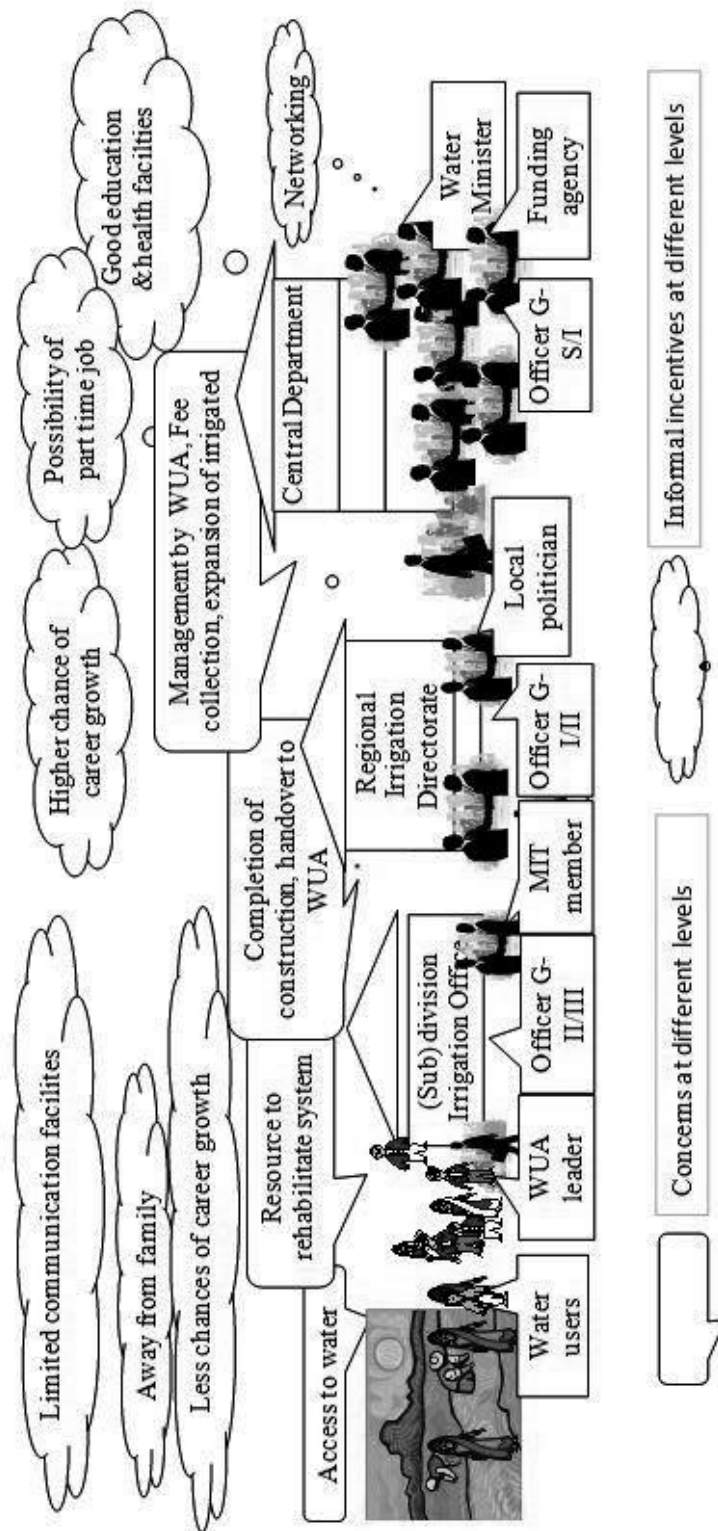
7.1.1 The importance of the Chief Engineer's attitude

Implementers' attitudes towards the policy agenda can be expected to influence implementation (Khanal 2003: 233). During the field study, I interacted with three engineers (E1, E2, and E3), all belonging to the *Madhesi* community who come from the Terai. E1 and E2 understood the policy directive to increase women's participation differently from E3, who had joined the office later.

E1 and E2 had studied in India and only had been exposed to South-Asian environments. They acknowledged women's contributions to agriculture and in irrigation, but were against a quota for women representatives in users' committees. They considered the quota policy a discriminatory policy, and reasoned that such discrimination was not called for in a democratic country. They added that the WUA was developed to increase productivity, the quota (in their opinion) risked bringing incompetent members into the committee, something that would negatively affect its chances of being effective. To support their argument they referred to the irrigation policy 1992 (amendment 2003), which was printed in their irrigation diary provided by the DOI.

It mentioned:

'A WUA should consist of 33 percent women if available.'



WUA- Water users’ association, GS/I/II/III- Gazetted special, first, second and third-class officer, MIT- Mobile irrigation team

Figure 7.1 Irrigation implementers, their interaction, major concerns, and informal incentives at different levels

E1 and E2 did not consider the criteria that WUA members should own land to be a restriction for female membership. They referred to Nepalese culture where women are customary co-owners of the land that a husband owns.

In addition, they argued:

'It is a family who should decide whether a man or a woman of a family joins the formal irrigation activities. Irrigation staff should not interfere in the intra-household issues of users.'

In contrast, E3, the Chief Engineer, had a different opinion. He considered the policy directive of 33% for women's participation in users' committees with the clause of *availability* a compulsory quota for women. His argument was that women exist everywhere in society and the clause of '*availability*' did mean '*mandatory*'. He explained that implementers can bring noticeable changes in dominant practices that are unfavourable to a particular group, in this case, the practice of official public meetings being considered a man's domain.

In his 18 years of work, he had been able to encourage women to be on the committee of three large irrigation projects in the Terai and two in the hills. The only exception was a large irrigation project in Mahotari in the Terai, where *pardah* i.e. covering head and often hiding face to respect others especially within family hierarchy was practiced in the villages. He referred to the Jhah Irrigation project in Rautahat district in the Terai with a Gender Development Index of 63 and a Women Empowerment Index of 72, where women membership in the committee was 11.43%.

Table 7.3 presents an overview of the different projects he had implemented and shows the percentage of women's participation in the committees. He realized that the mere presence of women might not bring tangible changes in accessing water. However, he did consider the presence of some women in WUA committees as one possible step toward changing dominant gender-biased practices.

Table 7.3 illustrates how different individuals working at the same office may have very different opinions about (the importance) of gender, and differently interpret the gender components of policies and projects. E1 and E2 perceived their work as the construction of irrigation systems only, so they wanted WUA members to be available to help achieve this. They were not worried about the delay of budget releases, as the construction work of the office was to start in December during winter. They argued that farmers would be free from their agricultural activities in this period, so they would be available to provide labour for construction as there were no standing crops in the field. They also had no problems with the existing gender relations. They viewed these as part of the same socio-cultural norms and values which they approved of and shared. So for them, there was no need or urgency to work on gender issues. This also explains their interpretation of the policy directive to increase women's participation as an optional activity.

Project	Location	Type	CA ha	Agency	Project	Year	Beneficiary		Women in committee		Remarks	
							Pop.	HH	Req.%	no		Achieved%
Handetar IP Lamjung	Parewa Danda	Construction	220	HMG		1976	4607	513	-	-		
		Rehab		USAID	IMP	1988	4607	513	-	6	11.32	Project policy to encourage women
Bighi IP Mahottari	Mahadaiya, Kunta, Ratauli, Bhamarpura, Pipra, Sahorwa, Banauli, Danauli	New	2000	ADB	ISP	1994			20	0	Irrigation policy 1992	
		Construction	12500	HMG		1973-83						
Kamala IP Dhanusa Siraha	44 VDC 46 VDC	Construction	12500	ADB	IMTP	1999-00	15275	2136	20	7	5.15	Irrigation policy, 1996 (amendment)
		Rehab	12500				19436	1288		7	0.54	Ibid.
Jhanjh IP Rautahat	19 VDC	Construction	4000	IMC		1957-60						
		Rehab	4000	HMG		2003	---		20	12	11.43	Ibid
Bhusune Asari IP Udayapur	Triyuga Municipality	Construction		ADB	SISP							
		Rehab		HMG		2004	---	279	33	4	30.76	Irrigation Regulation 2003

HMG- His Majesty's Government, USAID-United State Agency for International Development, ADB-Asian Development Bank, IMC-Indian Cooperation Mission, ISP-Irrigation Sector Programme, IMTP-Irrigation Management Transfer Project, SISP-Second Irrigation Sector Project, Req.%- required percentage of women's participation in WUA committee according to government policy
Source: Subdivision head, Udayapur District, Department of Irrigation 2005

Table 7.3 Women's participation in irrigation projects, implemented by E3, Chief, Subdivision Irrigation Office, Udayapur

In contrast, E3 who had been exposed to different socio-cultural contexts (as described in box 7.1), believed in the importance of structural change, and saw the improvement of women's participation in WUAs as possibly contributing to such change. As a result, all systems rehabilitated under his leadership had women in their committees.

Box 7.1 Officer E3 and his experiences on gender

... 'Gender', I heard first in grammar at school. At my home, both sons and daughters were equally encouraged to study, so I did not experience discrimination. My father was usually away for social, official, and political activities. My mother managed farming. At that time, my neighbours used to send their son to school up to grade seven or ten. The fee was paid from the money given by the father of a girl (as dowry) whom the boy would marry in the future. They did not send their daughters for study, thinking that daughters would take care of housework for which formal education was not important; and after marriage they would go to the husband's home.

Moscow, as I experienced in my twenties as an engineering student in the 1980s, exposed me to different socio-cultural environments. It made me aware about 'gender as a strategy for development'. My exposure to an open society broadened my understanding of gender equality.

Once, when I was back from Moscow I suggested to my neighbour to send his children to school. He asked me how much money I had brought back to help my family. I replied, "I am a student, I do not have money". He quickly replied to say that his children had helped him in farming to earn money and I - who was twenty - had not yet done anything for the family. He questioned why he needed to send his children to school. I was shocked and I left the place immediately because I did not have answers to convince him at that time. Over time, I reflected and realized that structural change is an important parameter for social change, whether it is gender equity or any other.'

The positive attitude of E3 to gender and structural inequities also showed in his actions. For instance, he had put up a notice in the front yard of his office, informing users about possibilities to apply for government grants. The notice explicitly made mention of the quota of a minimum of 33% women's representation in WUA committees, stating that this was a requirement when farmers wanted to make an application. Such a notice was not there at the office before E3 had joined.

More in general, E3 had a considerate and flexible attitude when dealing with users' wishes and needs concerning new irrigation system designs. For instance, one of the projects implemented during the study period had an approved design to improve the existing siphon structures (BAIS, discussed in chapter 4). Farmers disagreed with the design, as they found the repair and maintenance of the siphon to be cumbersome and risky. They requested E3 to modify the design, replacing the siphon with an aqueduct. E3, as chief of the office, approved the users' request, on condition that there would be no change in the budget. In the end, he implemented the project successfully with tail-enders receiving water. Even the local Maoist FM Radio broadcast the news, thanking the engineer.

E3 was also ready to assume responsibilities for mainstreaming gender in his office and work. He even proposed himself as the gender focal person, when the district women development office (WDO) asked government line agencies to nominate a gender focal point to ensure gender mainstreaming in all line agencies. Many other offices only selected female staff. Some even nominated administrative staff members, and in one case a woman store keeper, as gender focal points. This obviously had little effect on how the programmes were implemented. In contrast, E3 proposed his own name as the gender focal person, considering his central role in the office. Once, when the WDO organized gender training for the line agencies, E3 sent his AO to the training to improve his capacity to work on gender issues in the field.

7.1.2 Professional identities and consciousness of gender issues

I used group discussions and interviews to obtain an understanding of the professional identities of different staff grades. Also I undertook ‘shadowing’ as a research method, applying participatory observation while going along on fieldtrips with the officers.

Overseers

An overseer participating in a focus group discussion about the policy directive to increase women’s participation mentioned:

‘We are not going to ask women to come and take part in canal works. They have to come and talk to us, if their need is different.’

- Overseer, subdivision irrigation office, Udayapur, 2005

He saw his role as supervisor of construction. He was in charge of some three to six systems in four to six months, which left him limited time to spend with users. Having no training on participatory processes, group formation, or gender issues, he lacked skills as well as attitude to engage actively in efforts to improve the participation of women.

Engineers

Box 7.2 documents a field visit with irrigation staff in the office vehicle when we were travelling to a water system located in Katari VDC and the BAIS in Triyuga Municipality (discussed in chapter 4).

Box 7.2 Journey to the irrigation systems

As soon as E3 joined the office, he called a staff meeting to plan field visits. The team decided to visit a site located in Katari, some four hours drive from the office. On the day of the visit, one of the overseers arrived late, and the AO (Mr.S) did not show up. The chief E3 had to send the peon to call him.

E3 made sure that all field equipment was working well and placed it in the office jeep. He asked an overseer to check this. The overseer removed the levelling equipment from a box, but could not put it back. The chief E3 then came forward and put it inside the box. He remarked:

'Technicians should know the tools.'

Finally, the journey began with the chief engineer, two overseers, the AO, and me. There were several army checkpoints along the way. Close to the project site, a villager (man) joined the team and explained about the project area. The team walked to the water source, assessed the water flow, discussed the possibility to build structures, and came back to the village after two hours walking. Many other users (men) joined the team on the way.

Eighteen male users had gathered to meet the officers. An informal meeting (without writing minutes or signatures) took place in a public place. One speaker informed the officers that users had formed a 27- member WUA. The chief asked the reasons for such a big committee, which normally would range from nine to thirteen. A user replied:

'All those interested to lend money to the WUA for construction, till we receive money from the irrigation office, are on the committee'.

The DOI rule was that it would pay a WUA for carrying out a part of the construction work after submission of the bills. The work would take about three to four months. So, the WUA need an initial sum of money to cover that time. The engineer questioned the wisdom of having a bigger committee, explaining that it might make it difficult to have the quorum needed to make decisions. The meeting ended with E3 highlighting the formal procedures to work with the office. He directed the AO (Mr. S) to assist the farmers with setting up a WUA constitution, depositing the minimum cash amount into the bank, and conducting a General Assembly meeting as soon as possible.

The next week the team visited another system (the BAIS discussed in Chapter 4) located at a fifteen minutes' drive from the office. Unlike the first visit, all officers arrived and reached the site in time. There was no reluctance of the AO and others, as had been observed in the first visit. Four villagers were waiting for the team in the system. One was the WUA president (named Mr T) of the system.

Another was the WUA president (named Mr C) of the neighbouring system downstream. The other two were WUA committee members. Mr C stressed on the need to change one of the present siphon structures into an aqueduct, because of the difficulty to clean the siphon. Others agreed, feeling glad that their neighbour explained their need. E3 replied that it would only be possible in case of sufficient budget, as an aqueduct was not planned for in the approved design.

The team inspected the head-works of the system and came down to the village to halt for a while at the house of the WUA president (Mr T). The wife of Mr T, a cheerful lady, and a volunteer of the water and sanitation programme of the ADWS (discussed in chapter 5) offered tea. She mentioned her wish for the infrastructure of the system to improve. After a while, an ex-WUA-member and a woman from the same Ward, also a user, came in, greeted the officers, and expressed her enthusiasm to work together. The team then walked towards the tail end of the system accompanied by male farmers. None of the women joined the team, they went back to their household work.

On their way, the E3 stopped for a while at the siphon structure. He discussed the mismatch in implementation. An engineering unit of the DDC had constructed a road above the siphon. E3 observed that these siphons could not bear the load of heavy vehicles moving above. He used his engineering knowledge to enlighten users and his office staff. Overseers agreed, blaming junior technicians of the DDC: 'In qualification they are sub-overseers, junior to overseers, but they have little technical knowhow'. In addition, E3 encouraged users to complain at the DDC on behalf of the WUA and ask for compensation if any damage happened to the siphon. He said: 'The structure is your property, you are the ones to take care of it. If you do not take care of your system, water will not flow.'

These observations suggest that although E3 was positive and pro-active about the gender policy agenda, he needed to juggle his progressive ideas on gendered change carefully with his status and identity as an engineer. He seemed to realize, perhaps implicitly, that for his gender efforts to be successful, he needed to maintain his professional reputation as a capable engineer, both with the irrigation staff at the office and among farmers in the field.

As in this case, when he had planned the field visit, and he realized his staff were reluctant to go. When he repacked the technical equipment for transport, because the overseer could not do this, he demonstrated his technical knowledge. Through his remark: 'A technician should know the tools', he showed his technical superiority and capability, at the same time setting an example for his staff.

Another example of E3's deliberate demonstration of his technical prowess was his explanation of the function and location of the siphon structure. Here, he not only displayed his competence to his staff, but also attempted to meet the expectations of farmers and so gain legitimacy in their eyes. It seems to me that through carefully establishing his credibility as an irrigation engineer, E3 also created room for himself to address less conventional engineering topics such as gender.

Association organizer and personal culture

Association organizers (AO) were the staff who work directly with users. In this sense, they can be likened to what Lipsky (1980) called 'street-level bureaucrats'. Lipsky underscored the importance of street-level bureaucrats in policy translation. Confirming Lipsky's argument, I found that AOs did play important roles in translating policies into realities. Data on the

‘shadowing’ of the AOs in Udayapur district and of the focus group discussion with AOs working in the EDR, held at the regional irrigation office in Biratnagar, will substantiate my findings. My analysis shows that the combination of their personal culture (convictions, norms) and the attitude of their boss towards gender together importantly influenced whether and how AOs would deal with the policy directive to improve the participation of women.

A case of an AO from an Indo-Aryan caste group, Subdivision Office, Udayapur

In 2004-05, an AO, Mr. S, who belonged to an Indo-Aryan high caste family, had to facilitate the process of the formation of WUAs in five systems within four months. To begin his work, he travelled to a project site at 8 am to meet WUA leaders. His objective was to guide them in drafting the WUA constitution, following DOI guidelines. He also wanted to help the WUA with the formation of different WUA committees to carry out the work. When he reached the village, he contacted a male user whom he had already informed about his visit. The meeting of (male) WUA representatives took place at the house of one of them. A woman member joined the team. The AO greeted her with respect. He addressed her as *Bhauju* – ‘wife of a brother’ in Nepalese.¹ Using such terms was a way for the AO to gain acceptance among villagers, be polite to show respect. But they also work to maintain and reinforce gender-based social relations.

When queried, Mr. S emphasised that his cultural norms prompted him to talk to village women in respectful relational terms, such as *ama* ‘mother’ (for an elderly woman) and *bhauju* ‘sister-in-law’ (for a married woman) or *bahini* ‘sister’ (for an unmarried woman). It shows that the communication of AOs, when they would interact with water users, would be framed by their own social values and norms, including those about gender relations.

Since Mr. S had to work in five systems within four months, he often skipped later formal WUA meetings after this first guidance meeting, instead moved to other systems. It was only when he started working with Chief Engineer E3 - who wanted to ensure women’s participation in the committee - that Mr S informed WUA leaders about the policy clause on women’s participation. He had not done this when still working under chief E1, who was not concerned about women’s participation in the committee.

Mr S had attended training on gender mainstreaming organized by the WDO, Udayapur, encouraged by his senior officers. At a FGD with overseers and AOs at his office in 2005, he was asked to share about the training experiences. He giggled and replied:

‘I and my wife would have divorced by now if we had followed everything taught in the training.’

-Focus group discussion, Irrigation subdivision office, Udayapur, 2005

¹In Nepalese tradition, Brother (*Daju*) is used for men to greet each other with respect.

From further discussions and observations, I concluded that any discussion of intra-household issues was embarrassing Mr S.

I conducted a FGD with five AOs working at the Division and Subdivision offices in the EDR, who belonged to different caste groups, to share their views on the policy agenda and discuss the outcomes of their efforts. This discussion was organized at the regional irrigation office Biratnagar in 2005. Table 7.4 provides some information on their backgrounds.

Table 7.4 AOs working in the EDR and their background

AO	Age	Caste/Ethnicity	Years of Service	Education	Training
Female	30	Madhesi	4	SLC	Institutional development Institutional development,
Male	42	Indo-aryan	16	IA/ BL	Training of trainers on WUA strengthening
Male	37	Madhesi	14	IA	Institutional development
Male	38	Tibeto Burman	16	BBA	Institutional development Institutional development
Male	34	Tibeto Buraman	14	SLC	Training of trainers on WUA strengthening

SLC- School leaving certificate, IA- Intermediate in Art, BL- Bachelor of Law, BBA- Bachelor in business administration

Source: Focus group discussion with AOs of EDR, Regional Irrigation Office, Biratnagar, 2005

Two AOs of Tibeto-Burman (TB) origin explained that in the projects they had implemented, there was participation of women, as they had made explicit efforts to encourage women to participate in trainings, committees, and meetings.

Within the TB community, gender roles are less hierarchical and less segregated than in the Indo-Aryan communities².

For these AOs, asking women to join the formal irrigation activities was not contradicting their personal culture and values. In contrast, two AOs from the Terai community (a woman and a man) were quiet during the discussion. But during the lunch break, they started talking, as they felt more comfortable in this informal setting. They admitted that they had not been able to follow all of the discussion, as this was the first time they had ever participated in a debate on women's participation in the water sector.

²As explained earlier, unlike the Indo-Aryan community of the Brahmin-Chhetri and many Terai caste group, the TB community values sons and daughters equally in rituals like death and birth (Tiwari 2007).

All AOs had received training on institutional development and two of them had also attended courses for Training of Trainers for WUA strengthening. An AO had a manual called (in Nepalese) *Mahila ra Purus Samabikas*, i.e. *Women and Men - equal development*, published by UNICEF. The manual had a page on women and water. It highlighted the importance of equality of men and women, based on the argument that the entire population consists of men and women both.

‘Availability’ was mentioned in the clause about women’s participation in the irrigation policy document. None of the five AOs interpreted it as implying that women’s participation was optional, as E1 and E2 did. Instead, they understood it was mandatory to have a minimum of 33% women members on a WUA committee.

The two AOs from the Terai (who worked in the same area) were aware about the policy clause. However, they explained that they were not able to meet the 33% target in many WUAs. They said they did encourage women to be on the committee, but if women refused or no women were coming forward, they would form a WUA only with men. They thought it would not be a problem, as this did not count in their work performance evaluation, nor was it ever questioned by the chief of their office. Rather, they said that it was understood that bringing women into an official domain in the Terai society was difficult. If their boss insisted they achieve the targets, they would ask the users to nominate two to three women.

These findings confirm the earlier conclusion that officers’ efforts to improve women’s participation in WUA committees largely depended on their personal convictions, culture, and attitudes to women and gender, in combination with the instructions and encouragement they would receive from their bosses. The existence of official procedures appeared less important.

7.2 The Regional Irrigation Directorate, Biratnagar, EDR

The Regional Irrigation Directorate (RID), Biratnagar, in the Terai of the EDR was responsible for nine Division and Subdivision Offices (Table 7.1), three Irrigation Management Divisions and a Machinery Division. An officer of *gazetted* first-class rank headed the Office as its Regional Director. The Regional Director was assisted by three engineers of a minimum *gazetted* second-class rank, a sociologist, and an agronomist.

The role of the RID was to monitor and supervise the systems designed and constructed by Division and Subdivision offices, and to monitor the work of the Irrigation Management and Machinery Divisions. The office also conducted impact studies after irrigation projects when completed. When required, the RID would conduct field visits through a Mobile Irrigation Team (MIT). This team consisted of a sociologist, an engineer, and an agronomist.

The office also organized events to implement joint projects with different government line agencies. For example, at the time of my field visit, there was a programme on integrated crop and water management in partnership with the Agriculture Office.

Beside these tasks, the Regional Director had to oversee evaluations and recommend names of staff from the region to the Director General of DOI for transfer.

Engineers were seen as responsible for monitoring the engineering aspects, i.e. the ‘*hardware*’ of the irrigation work, whereas the sociologist was responsible for the institutional aspects, i.e. the ‘*software*’ of irrigation projects. At my office visit I found all staff were men. Meanwhile the sociologist was busy preparing data sheets on WUAs in the region.

Politicians were frequent visitors to the office. When I visited the office in 2005, the Director had received the Minister of Water Resources the day before. He took the Minister (a man) to visit a large irrigation system, together with the two other engineers, and the sociologist. A (male) Member of Parliament had visited the office a month earlier.

The Director observed that visits of politicians were beneficial most of the time, because they interacted with WUA leaders and encouraged them to participate actively in system management, which was the concern of the DOI.

He added:

‘Users take the words of local politicians more seriously than those of the officers who keep on changing.’

- Director, RID, Biratnagar, 2005

This indicates that the Regional Director was serious about user participation in system management at this level.

7.2.1 Officers’ attitudes and perceptions on gender

The Director of the office, who is not directly involved in project implementation viewed gender as follows:

‘...the concept of gender emerged from the weak position of women in a society. Gender equality is about not having a situation of subordination of both men and women. In a Nepalese context, a gender gap emerged with a gender division between household work and official work; and the values attached to it.’

I held a focus group discussion with the Chiefs of the Division and Subdivision Offices from RID at the Directorate Office, Biratnagar, in October 2005. Seven of the nine chiefs participated, together with the sociologist of the RID. The discussion was conducted with two objectives, to understand (1) officers’ reflections on implementing the policy agenda to improve women’s participation in WUA committees and to mainstream gender, (2) their political position on what kind of gender mainstreaming they favoured.

To the first question officers showed mixed reactions. Many said the policy agenda was fine, but that a quota for women by itself was not sufficient to address gender inequities in irrigation systems. An officer from Jhapa district, the place where the Nepal government had

housed Bhutanese refugees, made an attempt to open up the discussion about what should be considered gender in their work.

He argued:

'The number of women users involved in system construction is usually low in a command area.'

All officers agreed with this observation.

'However, the number of women working as labourers who are not users doubled when contractors took up the irrigation construction work. Among the female labourers, most are Bhutanese refugees who get paid lower wage rates.'

Being concerned about the plight of women, the officer wondered:

'...whether the pain of these women is a gender concern in our work or not.'

He showed sympathy to inequities associated with irrigation works, but wondered what to call gender issues and how to address these. He questioned not only the dominant practice of only considering irrigating farmers (the ultimate beneficiaries), but pointed out a need to think also about inequities created and perpetuated in each and every step of the implementation of irrigation projects.

For the second question I used a framework based on Ely & Meyerson (2000:106) that identifies different approaches to address gender in organizations (Figure 7.2).

Each frame had a specific definition of gender and of the problem to be addressed, a vision for gender equity, and an approach to change. I used this approach to identify which frame participants would prefer if they were to design water programmes.

Among the participants in the FGD, seven were engineers - one of which was an engineer at RID, whereas the others were chief engineers from the division and subdivision offices and EDR. The eighth one was a sociologist of RID (see Table 7.5).

I first explained the framework to the participants, distinguishing the four different approaches to work on gender issues. Many appreciated the clarity which with the table categorized different ways of working on gender and thought it was useful. I then asked participants if they thought they could use the framework to assess their own³ standpoint on addressing gender in their work. They agreed to use the frame.

The officers were then asked:

'If you were to address gender in your work, in which order would you adopt the different approaches?'

³During the session I used the word 'our' to make it inclusive.

Frame	Definition of gender	Problem definition	Vision of gender equity	Approach to change
Frame 1: Fix the women	Socialized sex differences	Women lack skills, knowhow to play the game	No differences between men and women; women are just like men	Develop women's skills through training, mentoring etc.
Frame 2: Value the feminine	Socialized sex differences; separate spheres of activity	Women's skills not valued or recognized	Differences recognized, valued, preserved	Diversity training, reward and celebrate differences,
Frame 3: Create equal opportunities	Sex differences in treatment, access, opportunity	Differential structures of power and opportunity yield less access, fewer resources for women	Create level playing field by reducing structural barriers, biases	Policies to compensate for structural barriers, e.g. Affirmative action, work family benefits
Frame 4: Assess and revise work culture	System of oppressive relations reproduced in and by social practices	Social practices designed by class privileged men appear neutral but uphold gender as fixed, ranked oppositions	Process of identifying and revising oppressive social practices; gender no longer and axis of power	Emerging, localized process of incremental change involving critique, narrative revision, experimentation

Source: based on Ely & Meyerson 2000:106

Figure 7.2 Framework to work on gender issues

Only three officers gave first priority to structural changes and affirmative action (Frame 3). These included a sociologist of the regional office, the progressive chief (E3) of the Udayapur Sub-Division Office, and another engineer. They agreed with the directive for women's participation in committees. Another three gave first priority to softer approaches, i.e. to train women to improve their capacity and to dilute the gender-based division of roles (Frame 1). The other two chose Frame 4 that calls for an approach based on identifying and revising oppressive cultural practices.

Table 7.5 Background of participants in a FGD with officers, RID

Caste	Age/ Service Period	Education	Training
Madhesi	48/24	BE Civil	Water management, administration
Madhesi	46/NA	ME Irrigation	Water management, administration
Terai B/C	47/22	M.Tech Hydro	Planning and administration
Madhesi	46/18	ME	Management
Hill B/C	40/15	MA sociology	Institutional development
Hill B/C	49/25	BE Civil, MPA	Planning and budgeting
Madhesi	48/22	B.Tech Agri	Project administration management
Madhesi	48/22	BE civil, ME	Construction

Source: Field data from interactive workshop, RID, Biratnagar 2005

Hence, only three out of eight chose approaches that would include procedures like a quota for improving women's participation in committees.

This suggests that many senior officers would not choose quota or affirmative action policies as their preferred approach to work on gender, because they had a different view on what they called the problems of gender inequality and inequity. This would undoubtedly affect their commitment to implement the quota policy, and the effectiveness of policy implementation.

7.2.2 Priorities and Incentives

The director of the RID observed that gender is not the priority of the office. He gave this reason:

'Gender mainstreaming is not a priority now in DOI compared to the urgent agenda of increasing users' participation at any cost. This is because if users managed the systems, the DOI would be out of its financial burden. In addition, our concern is to increase productivity. Increasing women's participation in users' organization is the result of a global whim. I do not understand its direct link with our work. We would only seriously work on it, if it would increase productivity and the functioning of WUAs.'

- Personal communication, Regional Director, Biratnagar, May 2005

Another Chief of the Division Office shared his views during the FGD at the RID on existing gender relations and its influence on women's participation. Reflecting on his own intra-

household situation, he shared that his educated wife never allowed him to cook and work in the kitchen. His eldest daughter (he had only daughters) refused to choose a career either as a doctor or an engineer, as the example of her mother taught her that education would not release her from having to look after the kitchen and the family. So instead she preferred to choose a career more suited to assume her future household responsibilities, such as social work, nursing, or home science. Using this example, the Chief of the Division Office concluded there was a mismatch between the directive for women's participation and existing women's roles in Nepalese society. According to him, until and unless there was a shift in gender relations it would be difficult to implement the policy directive.

The views of officers reflect their understanding of DOI priorities: achieving users' participation to help achieve objectives of cost recovery through the collection of water fees was more important than gender equality. For them, there were few to no formal or informal incentives to work towards implementing the policy agenda on gender. Although many did have ideas on gender, their questions and information also showed the need for further work on gender and irrigation, looking beyond only women's participation in management. All officers at this level mentioned they had never seen a manual on gender mainstreaming in irrigation or read a paper on women/gender and irrigation. This indicates a low level of awareness⁴.

7.2.3 Maintaining professional identity, and hierarchy

As noted for E3, my observations and interviews showed that maintaining their professional credibility as engineers – consisting mainly of the technical expertise to design and construct systems - was important to officers at this level. I was a participant observer at a consultation meeting of officers of the Agriculture and Irrigation Offices at the conference hall of the RID in October 2005. It was a workshop for officers working at District level about the implementation modalities of an integrated programme on irrigation and agriculture. There were about 30 participants, including the chiefs of the Irrigation and Agriculture Directorate from the EDR.

A tension surfaced between the heads of the Regional Irrigation and Agriculture offices at the end of the meeting, as both men delivered closing remarks. The Director of the Agriculture office said:

'...Irrigation systems are to be constructed in areas with potential for agriculture. Hence, there is a need that the Irrigation Directorate coordinates with the Agriculture Directorate....'

- Director, Regional Agriculture Office, 2005

⁴For further detail on the use of the manual and guidelines on gender mainstreaming in water management, visit www.iwmi.cgiar.org/assessment/files.../EffectiveGender_BothEnds.pdf

His statement challenged the professional identity and ego of the Irrigation Directorate, making it seem of secondary importance to the Agriculture Directorate. Hence, following this speech, the Irrigation Director in his speech tried emphasizing that irrigation comes first:

'...even in a desert, possibilities to have access to irrigation water can make a place suitable for agriculture.'

- Director, Regional Irrigation Office, 2005

He meant that only after the Irrigation Office had brought water to an area by constructing systems, the Agriculture Office could start their work. The vibrant sound and tone of his expression showed how emotional he was about the importance of his profession and office. It also revealed that the construction of systems (to take water to crops) forms the heart of this profession. This techno-oriented professional identity could limit the space to work explicitly and openly on issues of water access and equity.

7.3 The Central office, Department of Irrigation

The central office of the DOI was situated in Lalitpur district of Kathmandu Valley during the study period in 2006-07. A sculpture of healthy paddy panicles in the front yard added to the aesthetic value of the big new modern buildings of the department. The staff at the DOI headquarter were responsible for the execution of the Nepalese government vision to develop irrigated agriculture in the country.

A Director General (DG) headed the office, assisted by four Deputy-Director Generals (DDG) as depicted in Figure 6.2. The DG of the office was responsible for large irrigation projects⁵ directly implemented by the central office, in addition to the overall management of field offices. Each division had a number of sections headed by gazetted second-class officers. The DG was directly answerable to the Secretary of the Ministry, and the DDGs to the DG, in turn. In 2006, the DG, DDGs, and heads of sections were all men.

Out of the total 165 positions at the central office, 57 were engineers, and another 30 were technicians (engineering). There were 3 sociologists, 1 agricultural economist, 12 administrative staff, and 61 support staff. Of the total, only 19 were women. Of the 3 sociologists, 1 was in the planning division and the other 2 were in the irrigation management division.

The office worked with central bodies such as ministries, the National Planning Commission, representatives of donor agencies, and the Federation of Irrigation Water Users Associations.

⁵ Large irrigation projects are defined as project with a command area (CA) of more than 1000 hectares in the Hills and 5000 hectares in the Terai. The large irrigation projects in the hills have a CA of 500-1000 hectares and in the Terai have 2000-5000 hectares (DOI 2010).

The words often heard in the day-to-day work of the central office were: ‘*Mission audai chha* (a mission is arriving)’, *software, hardware, reporting, budgeting, mission and field visits*.

With ‘a mission’, they referred to a team of funding agency representatives. The word worked to call the officers, alerting them to their task of dealing, negotiating, and proving that the DOI was doing well in implementing programmes. The phrase ‘*mission audai chha*’ illustrated the stress of officers about having to present a positive image of the Department to the visitors, as future funding might depend on it.

7.3.1 Organizational priority and attitude to gender

Historically, foreign aid and loans had covered a large portion of the DOI budget. At the time of the study, much organizational priority was placed on raising funds as well as on recovering the costs of implemented projects. The head of the planning section expressed in informal talks that in his work gender issues were micro-issues compared to the macro-issues of funding and cost recovery:

‘Without enough funds we cannot build structures and run the department. Once we raise resources, we have to focus on implementation that is important to continue funding. Therefore, we will be concerned with system design, construction, and forming viable users’ organizations that look after the collection of water fees. Do you think with all these in our heads we can think of micro- (gender) inequity issues in our work?’

- Personal communication, Officer, Planning Section, 2006.

Similar responses were observed during a focus group discussion with high-level officers at the central office in 2007. Called a consultation meeting, its objective was to invite officers to reflect on their experiences in implementing the gender components of water policies, focusing on efforts to improve women’s participation. After a short introduction about the meeting, the first response from a male officer (engineer) belonging to the *Madeshi* caste group was:

‘What is the relevance of the topic in our work? Why were we invited for the meeting?’

His question came in response to the term ‘gender mainstreaming’, which he perceived as not connected to his work. The Director of the Planning Section who had called the meeting replied:

‘Since officers have to implement the irrigation policy, it is important for us to discuss about gender and equity in our work.’

Though the officer remained quiet in response, he appeared unconvinced. The head of the Planning section was interested in the meeting, because he had been asked by the National Planning Commission (NPC) to work on the development of gender-sensitive indicators for the irrigation sector, so that relevant monitoring tools could be prepared. Unable to answer the NPC properly he was hoping the meeting would provide inputs for this.

These interactions suggest that the organizational emphasis on construction and cost recovery did not allow (at least some) officers to think about gender. Though positive about the issue, they might not be able to address gender concerns as they were preoccupied with funding and cost recovery. Others were simply unable to see a link between gender and irrigation in their work, which is why they ignored the policy agenda and did not require their junior staff to work on it.

7.3.2 The legal aspect of women's participation

Earlier in this thesis, I reported how a quota for women's participation was incorporated into policy documents, with the exact percentage of the quota changing from 20% to 33%, also depending on levels in other sectoral policies. This is why one sociologist called the percentage a fantasy figure. Also, when the policy was approved in the cabinet and came into force, a condition of women's *availability* was added in the document. I have shown how this clause of availability was subject to multiple interpretations, depending on officers' personal convictions and values.

A lawyer at the central office of the DOI had a legal interpretation of the mention of *availability*, which he explained when the head of the planning section invited him to do so. According to him, if women's participation were to become mandatory in the irrigation regulation, any WUA that would not meet this legal requirement would be an illegal WUA. To address a possible problem in this respect, the final policy document had the clause of *availability* so that any WUA that failed to have 33% women could still be a legal entity.

7.3.3 Professional identity

As shown throughout this chapter, the nature of the engineering work and identity was strongly associated with design and construction, and getting satisfaction from the transformations that such designs and infrastructure would bring. I report here some conversations with staff recorded at the central office.

I enquired from an officer to locate the irrigation systems mentioned on a data sheet he had provided. He tried to find a soft copy of the database, browsing through his computer. He looked into some more reports and remarked:

'We engineers are more interested in rivers than in administrative details.'

- Personal communication, officer, planning section, DOI, 2004

At our next meeting, he thought for a while how gender could be incorporated into irrigation programmes. He made a schematic diagram (design) of an irrigation system and the location of different tiers of a WUA. He remarked:

'Women should be encouraged to be the treasurers in the committee, as they are good in financial management. WUAs are just not able to collect water fees, having a woman treasurer might help in this.'

- Personal communication, officer, planning sector, DOI 2005

He tried to understand gender from a functional and instrumental logic, figuring out what women could do better than men so that the organizational objectives of cost recovery would be met. His reflections showed that he attributed secondary importance to gender equity compared to cost recovery.

These professional pre-occupations (construction, productivity, cost recovery) were not only observed among staff with an engineering background, but also among staff with a sociology background. For instance, I visited a female sociologist at the DOI in 2007, who had worked for eight years with the Department. She had returned recently after obtaining her Master's in gender studies from South Korea. She did her dissertation on 'women in politics', researching women's visibility in parliament and in political parties. When I asked why she did not study the same for the irrigation sector, because this would have helped her in her work and improved the capacity of the DOI, she answered:

'Gender and irrigation is too narrow a topic. Gender and irrigation is too specific compared to gender and politics, which creates wider career opportunities.'

- Sociologist, Planning section, DOI 2007

Her answer suggests that just as engineers would attribute a low priority to gender, gender-oriented scholars may attribute a low priority to irrigation.

7.3.4 Struggle to link gender and irrigation

Similar to findings at regional level, the central level officers also struggled to link gender to their work. During the focus group discussion with high level officers of the DOI, where officers reflected on their experiences with implementing the gender component of the water policy so far, they concluded that just a directive on women's participation was not enough. Here are three experiences shared by engineers who had worked for more than 15 years in the department.

(1) A sociologist explained an experience from the SISP funded by the ADB. The project had a mandate to recruit female field staff as community organizers. The hypothesis was that women community organizers would be able to address women users, and could therefore encourage women to participate in WUA activities, including in the committees. As a result, three female community organizers were selected in his project area.

The evaluation of the performance of these female community organizers after a year showed poor results. One community organizer (paid position) got married and had left the village, while the other two could not continue the work due to their household and family commitments. These two women could not perform their duty effectively as they had to combine their household with their office responsibilities. According to the sociologist, the project had failed to change the existing gender disparities these women were facing in their day-to-day activities. This is why they could not perform their work well. He concluded that,

similarly, if rural women are expected to participate in extra-household work, their responsibilities at household level would need to be revised.

(2) An engineer was of the opinion that female users would only participate in water projects, when the project addressed their primary needs. To support his statement, he shared his experience in implementing the Dhaulagiri Irrigation Project financed by ILO. At first, the project included women's empowerment components, such as literacy classes and women's saving groups. Despite this, women's participation and visibility in the irrigation users' group was nominal. After an evaluation, the second phase included community development and environmental protection components, whereby the project formed Community Development and Environmental Protection committees as well as income generation groups for women. Along with this, the project installed biogas plants for cooking, that saved women's time otherwise spent on fetching firewood. These components addressed women's primary needs and had a positive outcome, leading to increased women's participation in irrigation activities.

(3) A chief of the Irrigation Management Transfer Project (IMTP) in large irrigation projects in the Terai concluded that economic incentives were an important factor for women, to break the traditional norms that keep them away from formal water forums.

The Kamala irrigation project in the Terai aimed to increase women's participation as part of the IMTP⁶. It adopted affirmative action like recruiting a female sociologist and female farmer organizers, and hiring local consultants. It had positive results, to some extent. Since the posts of female farmer organizers were paid positions, family members encouraged women to apply because of the remuneration. Most of these women were from families where *purdah* was practiced. Because of the presence of women, the rate of service fee collection increased considerably as farmers could not deny payments to women and also trusted that the money would be managed properly.

That is why the IMTP chief argued that an economic incentive would be the main drive that encouraged family members to support women's decision to work outside home.

The officers concluded that increasing women's participation in the committees required an integrated approach. The implementation of the 33% directive on women's participation was difficult to implement effectively in isolated construction-oriented projects. They also said that more gender diversity would minimize water related conflicts compared to having only men in project teams and local committees. They referred to a case where the presence of women staff from the DOI had helped to solve a water conflict at community level.

These experiences illustrate that many engineers and DOI officers were prepared to take matters of gender equity seriously. They also show they have well-articulated opinions about

⁶ The IMTP was launched in 1992-94 and 1995-2001. The project included systematic turnover of 21 irrigation systems mostly in the Terai. With financial support from the ADB, the DOI implemented the project (ADB 2006).

how to go about it. Their long experience in working in different projects had given them rich insights and knowledge about what worked in terms of gender equity promotion, and what did not. Within projects and within the DOI, there usually was little space to share and reflect on these insights, also because addressing gender questions was not seen to belong to the core of the profession. As a result, little institutional learning on gender occurred within the DOI.

7.4 Conclusion

This chapter has shown how the professional and organizational identity and culture of the DOI was closely linked to the construction of irrigation systems. Because they considered design and construction as the core of their work, officers generally attached a relatively low priority to questions of gender. The professional and organizational characteristics of the DOI also provided little space to think and talk openly about gender, or to work on gender issues within the organization.

I also showed that there were few formal or informal incentives for the officers at the DOI to implement the policy agenda to achieve 33% of female users' participation in WUA committees. What has been achieved so far was the result of officers' personal gender convictions, whether they be engineers or sociologists. The organizational vision document guided the officers to achieve viable, sustainable, and efficient irrigation systems, the meaning of which was not directly linked to the gender agenda of the policy. The majority of the officers found it hard to link gender to irrigation, and tended to interpret it in ways that would instrumentally link gender to more accepted irrigation objectives (construction, cost recovery). Hence, rather than their reluctance or ignorance, the chapter has shown that the normal operating procedures and the technocratic culture of the organization made it difficult to make gender into a topic of importance effectively, as something that deserves professional attention.

This view invites further inquiries into what steps can be taken in irrigation project design and implementation to open the space to take questions of gender seriously and promote serious learning on the formulation and achievement of equity and gender goals; not only limiting the focus to participation of women in committees. The rich experiences of the DOI staff can serve as an important source of inspiration and reflection here.

Chapter 8: Doing Gender in a Drinking Water Context

Implementers at the Department of Water Supply and Sewerage

'Gender is danger. I would not like to talk much about it (gender) in my work.' (In laughter)

- DWSS Officer, Division office, Udayapur, 2004

I began this study assuming that the policy objective to improve women's participation in users' committees would be easier to achieve in the drinking water sector compared to the irrigation sector. This hypothesis was based on the fact that women's roles and responsibilities are easier to recognize in drinking water, as earlier studies showed (Acharya & Bennett 1981; Bhadra & Karki 2003).

Two statues marking the entrance of the central office of the Department of Water Supply and Sewerage (DWSS) seemed to underscore that there are many (symbolic) connections between women and drinking water: one statue, set in the middle of a pond, represented *Lord Shiva*¹ with goddess *Ganga*² sitting on his matted hair, pouring water into the pond. The other represented a lady in a *sari* pouring water from a *gagri*, a water pot, resting on her waist.

In spite of the relative ease which with connections between women and drinking water can be established, however, I have found that addressing gender questions within the DWSS is surrounded with complexities that are very similar to those in the DOI. The above opening quote indicates the reluctance of an officer to talk about gender in his work.

In this chapter I explore how gender can come to be associated with danger, as part of a more in-depth exploration of how officials like him were dealing with gender questions in their work.

To this effect, I analysed the day-to-day actions of the DWSS officers, focusing on their intentions and efforts to implement the policy directive to improve women's participation. I studied officers' actions at divisional, regional, and central level offices, which form the sections of this chapter.

The study took place in September 2004-November 2005 at division and regional offices. I

¹Lord Shiva in Hindu mythology is a god with an important role in creation, transformation, and destruction.

²Goddess Ganga in Hindu mythology symbolizes the source of water.

studied the department at central level in November 2005-March 2006.

I followed and updated DWSS data in subsequent years in 2008, 2010, and 2012. While analysing officers' actions, the reflection during these interactions and encounters with officers at DWSS was included.

By the time I began the field study in 2004, the Tenth Periodic Development Plan was in effect. The DWSS was implementing projects like the Small Town Drinking Water Supply and Sanitation Project and was preparing for the implementation of the Community Managed Water Supply Project, both funded by the Asian Development Bank (ADB). By this time, the mandate of the DWSS had been reshaped with some construction responsibilities having been shifted to the District Development Committees (DDC) and the Department of Local Infrastructure Development and Agricultural Roads (DOLIDAR).

As shown in chapter 6, the DWSS was struggling for its existence, attempting to define a new role for itself and justify its existence to outside funders. This was in response to the reluctance of some international funding agencies, like the World Bank, to work with the DWSS. Over time, their budget share had fallen to some thirty per cent of the total drinking water and sanitation sector budget, implying that many other actors had entered the sector. Thus, the DWSS was forced to collaborate and work with these other actors: NGOs, private sector companies, and local bodies, and had to face up to the criticism of their past implementation approaches.

In the Eastern Development Region (EDR), there were seven subdivision offices³ and eight division offices⁴ that provided services to 15 districts each. The regional monitoring and supervision office of the DWSS located in Dhankuta district had the responsibility to coordinate and monitor the water and sanitation (WATSAN) activities of the subdivision and division offices in the region. In addition, it was responsible for the provision of WATSAN services to the Dhankuta district⁵.

The decentralization of district water supply and sewerage offices to subdivision and division offices had taken place in 2001 as per the Decentralisation Act of 1982 and the Local Governance Act of 1999. This was to delegate more executive and decision making powers to local bodies, like the DDC, with the role of the DWSS primarily becoming one of monitoring.

Unlike the DOI, where the number of subdivision and division offices became less after the merging of district offices in 2002, the new structure of the DWSS, formed theoretically by

³The seven subdivision offices were at Taplejung, Pachthar, Terahthum, Sankhuwasava, Bhojpur, Solukhumbu, and Khotang district.

⁴The eight division offices were at Ilam, Jhapa, Morang, Sunsari, Okhaldhunga, Udayapur, Saptari, and Siraha districts. Each office was responsible for a district.

⁵This information was provided by the Planning Section, DWSS, 2004 and verified with DWSS documents available on the web (DWSS 2013).

merging 16 district offices in the EDR, had not changed the number of DWSS field offices. A DWSS officer remarked that there was reluctance among DWSS staff to reduce the number of DWSS offices at district level. Ultimately, the DWSS continued maintaining 16 field offices in each district of the EDR and altogether 75 offices in 75 districts of the country as subdivision, division, and regional offices.

8.1 The Division Office, Udayapur

The Udayapur Drinking Water Supply and Sewerage Division Office (located on the same road as the Subdivision Irrigation Office in Udayapur), worked in coordination with the Regional Office at Dhankuta. It provided WATSAN services to the users of Udayapur district.

This office had 22 staff positions. It was headed by a senior divisional engineer - *Gazetted* Second-Class, who belonged to the *Brahmin-Chhetri Indo-Aryan* caste group. In chapter 6, I already mentioned that the majority of the staff in the DWSS belonged to this caste group. The Head was assisted by one engineer, four overseers, one female worker, and three drinking water assistant-technicians. In addition, for office administration, there were two clerks, an accountant, a computer operator, a driver, and four peons. Most staff were men, 20 male and two female as shown in Table 8.1.

Table 8.1 Staff composition at DWSS division office, Udayapur

Post	No	Sex
Senior Divisional Engineer	1	Male
Engineer	1	Male
Overseer	4	Male
Clerk	2	Male
Accountant	1	Male
Computer operator	1	Male
Worker	1	Female
Drinking water assistant-technician	3	Male
Assistant drinking water assistant-technician	3	Male
Driver	1	Male
Peon	4	3Male/1Female
Total	22	20Male/2Female

Source: Field data, 2004/2005, division office, Udayapur

The engineer and the overseers were responsible for system design and carried out construction works with the assistance of technicians. The woman worker took care of the sanitation component of the projects. It included selecting women health volunteers and youth volunteers from among the beneficiaries, raising awareness on hygienic water and sanitation practices, and promoting the construction of toilets. Each of the drinking water programmes

had such a component on sanitation and the construction of toilets. Female workers were also responsible to encourage women users' participation in the overall programme, including their participation in the users' committee.

Like the irrigation subdivision office in Udayapur discussed in Chapter 7, the drinking water office was affected by the local political context in 2004-05. However, less tension was observed among DWSS staff compared to the irrigation office⁶. This could be because the Nepal army had not set up camp at their office like at the irrigation office. However, I observed that (like the DOI staff) none of the DWSS staff stayed overnight at the office during the study period, as they worried about possible night attacks by Maoist rebels on government offices.

This office also faced delays in budget releases in the study year, just like the DOI. The budget that DWSS was supposed to receive in July-August was only released in October (see Fig 8.1 for the annual planning and implementation cycle of the DWSS). That same year the DWSS remained without a Director General (DG) for more than ten months. Both incidents happened due to the political unrest in the country.

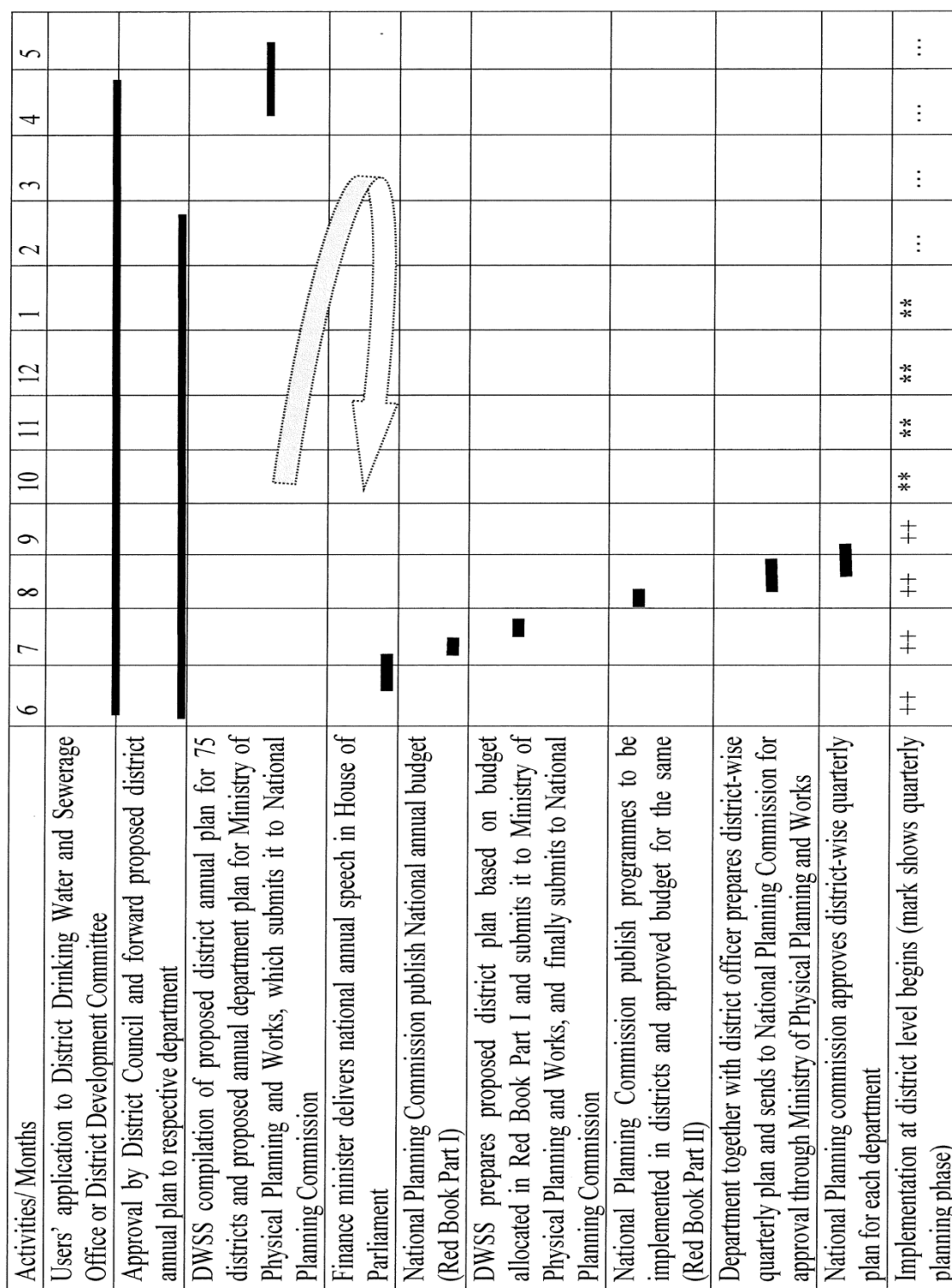
A DWSS official at the Planning Section said:

'The present government is a coalition government of four political parties, thus it was difficult to come to a consensus. Our DG could not be appointed in time. Everything was delayed. Neither did the National Planning Commission (NPC) bring out a Red Book I or Red Book II on time, nor could we prepare district-wise quarterly plans to get approval from NPC through our ministry. Hence our friends in the districts have remained idle.'

-Personal communication, DWSS Staff, Planning Section, Central Office, 2005

The restructuring of the DWSS district office into division and subdivision offices in 2001 was meant to reduce its role in the direct implementation of water systems and to take up a monitoring role. At the time of the field study in 2004-5, however, the division office Udayapur was assigned the construction and repair of 14 water supply projects. When I visited the office in 2004, coils of black polyethylene pipes were piled on the office premises. The projects were to be implemented between November 2004 (due to a delay in the budget) and the end of the fiscal year in June-July 2005. So they had only seven months time for implementation. Additionally, the office was to do feasibility studies of new projects and maintenance work on completed projects. Together, the approved budget of the Division

⁶Two of the subprojects (in Sankhuwasabha and Achham district) could not be completed during the Fourth Rural Water Supply and Sanitation Project for security reasons. Twenty percent of user associations formed during the project were not registered according to the Water Resources Act, due to the conflict. Either the users found it difficult to go to the DDC or the officer at the DDC was not available (ADB 2004). The DWSS reported that more than dozens of drinking water supply systems were destroyed at the time of the conflict (Bhattarai 2007).



Months 1 to 12 represent January to December of AD calendar

Figure 8.1 Annual programme planning and implementation cycle of DWSS

Source: DWSS, Planning Section 2005

Office was NRs 4,025,000, equivalent to USD 52,960⁷ in 2004. The budget for projects in Table 8.2 showed that work intensity varied from project to project. Also, these projects were located at diverse places with some situated at remote villages. In 2004, in addition to implementation work, the office also collected new users' requests for government support to construct systems and repair old systems.

Table 8.2 Annual budget and projects, Udayapur DWSS division office, 2004-05

SN.	Project Name	Budget allocated NRs
1	Panchawati DWSP	400,000
2	Rupatar DWSP	717,000
3	Jante DWSP	300,000
4	Hardeni DWSP	50,000
5	Tapeswori DWSP	235,000
6	Laphagau DWSP	400,000
7	Sirishe DWSP	10,000
8	Iname DWSP	10,000
9	Pokhari DWSP	10,000
10	Aptar DWSP	200,000
11	Thanagau DWSP	50,000
12	Katari 8, 9 DWSP	500,000
13	Bhumrasuwa DWSP	100,000
14	Katari DWSP	133,000
15	Okhale DWSP (remaining amt)	10,000
16	Feasibility study	50,000
17	Repair <i>maintenance of?</i> completed	150,000
18	Disaster	700,000
Total		4,025,000

Source: Udayapur Subdivision office, 2005

Similar to the irrigation office, the DWSS office worked in a competitive environment with the District Infrastructure Development Unit (DIDU) at the DDC that implemented small-scale development infrastructural projects, including drinking water.⁸

A technician of the division office observed:

'I would prefer not to work under the DDC. We are technicians and would love to have engineers as our bosses.'

- Technician, Division Office, DWSS, Udayapur, 2004

⁷During the study period in 2004, 1 USD was 76 NRs.

⁸This was after the Local Governance Act 1999 restructured district drinking water supply offices into division and subdivision offices in 2004.

His view showed that there was a professional hierarchy in which technicians - like sub-overseers and overseers - would prefer to work under senior engineers rather than under local politicians of the DDC.

8.1.1. Importance of the Chief Engineer's attitude

When I visited the chief of the office (here onwards E1) for the first time, he had a visitor, the president of the users' association of the Asari Drinking Water System (ADWS) (discussed in Chapter 5). After a while, I introduced myself and the topic of my research, requesting his support in identifying the systems that could be studied in detail. He introduced me to the ADWS president and asked an overseer who was in his office to provide me with documents on drinking water systems implemented by the office. He even arranged a working space for me in the office, which was overwhelming and made me feel welcome. I followed the overseer who showed me a cupboard full of all the project feasibility studies and completion reports, treating me as if I were a part of the office. However at the end, he remarked in laughter:

'Please do not ask me about the topic. Talking about 'gender' is 'danger.'

So he considered the topic of gender controversial. Even during my subsequent interactions with him, he avoided further communications about the subject matter. He always guided me to other staff. Hence, visiting a system together with him proved impossible.

Further in my field study, I came to understand his remark against the context in which he had been working for more than 15 years with the DWSS. 'Gender' had been a buzzword in his work for over two decades. He belonged to a large group of DWSS officers who had already worked with gender experts during the Third and Fourth RWSSSP for eight years. They had been asked to implement the gender components of projects as part of their work, and to spend more time with users.

Many of them did not see this as being directly linked to their professional work as engineers. As a consequence, several were slightly irritated that they were requested to do this, and many were not convinced of its relevance.

Officers wondered, for instance:

'Should I help users to access water or should I construct systems that bring water to them?'

Having similar feelings, the chief E1 tried to avoid interacting with me, - a researcher working on gender. He nevertheless showed his awareness of and familiarity with the topic, also implicitly acknowledging that it formed an intrinsic part of the DWSS agenda. More so, he had opened the door of the division office to allow me to examine the gender dimensions of the work his office was executing.

Also, an official in the post 'women worker' at the office remarked about him:

'I am thankful; my boss accommodates my family problems while implementing office work.'

In general, E1 was accommodative to the gender-based needs of the men and women of his staff. His reluctance to talk about gender in his work might have stemmed, therefore, from his experiences with female staff and more specifically with the difficulties of female staff members to combine office work with their domestic duties. These often meant that the work would not be done, or he had had to assign others, mostly junior technicians, to carry out her work. The contrast he observed between working on gender and talking about gender might have led him *to joke about gender as danger*.

Over time, I came to understand that his mention of danger was also related to the blames DWSS officers had received in the past, about not being 'social' enough (see Shrestha & Pykurel 1996). He anticipated and feared similar allegations about his own and his staff's gender awareness.

More in general, the welcome I received at this division office compared favourably to the welcome I had received at the DOI offices. As in the division office, the central office also arranged a space for me to work and welcomed my participation in the ongoing project activities of the DWSS.

I conclude that DWSS had come to accept and acknowledge the idea of gender as forming a part of their work. How they 'did gender' was a different topic.

8.1.2 Staffing for gender issues and gender-based staffing

As shown in Table 8.1, there were 22 staff members at the office. The job description of 12 staff members was on the technical aspects of design, construction, repair, and/or maintenance of systems. One female in the post of 'women worker' had the responsibility for the sanitation component, as clearly spelled out in the job description (DWSS 2013). She was also to encourage women's participation in the programme, which was not spelled out in her job description. However, the project procedural guidelines of the FRWSSP did mention her role to communicate with women water users.

The recruitment of this woman worker began in 1986, after the midterm review of the international decade on Water and Sanitation (1981-91) showed poor results. This decision was influenced by the funders of the DWSS, including the ADB. Accordingly, the DWSS recruited one female worker in every district. This number increased under the influence of the ADB in the 1990s to hire two female workers per district (Regmi 2000:102), but was later (after the restructuring in 2001) reduced to one again in each field office.

The position of female worker was ranked as non-gazetted II. They had the primary responsibility of helping to realize the sanitation and health related goals of the DWSS. Their job description did not spell out that they were to encourage women's participation (DWSS

2013), although many did perceive a link between female workers and the policy objective of encouraging women users' participation in the overall WATSAN programme of the DWSS.

I provide here an example of the FWRSSSP implementation mechanism to illustrate the nature of the work at the DWSS division office and the role of the female worker in it. A project working procedure document mentioned that a subproject of FWRSSSP was to be implemented in two years. The first year had to include a feasibility study and an identification of the project, in coordination with the Village Development Committee and the DDC. The second year involved planning and budgeting of the subproject for approval, working with the community, construction, and handover. In this process, there was a social preparation phase of 3 months for each project. This phase focussed on making beneficiaries aware about the FWRSSSP principles, ensuring commitment, and forming water users' committees and associations (WUA). Also included was signing an agreement (contract) between the DWSS office and the WUA. In addition, the DWSS was to conduct an on-site training of six days for users' committee members, and women and youth volunteers selected from among the beneficiaries, on water use, health, hygiene, and sanitation.

The recruitment of women workers was to make these activities successful so that in addition to drinking water the sanitation component of the DWSS would be implemented effectively. More than women's participation in decision making, women's role on sanitation in Nepalese society was recognized. Hence the effort was to involve particularly women as members for the sake of a successful implementation of sanitation activities.

In practice, DWSS staff members were found to be working in a team and such activities were not just the responsibility of one or two women workers at the office.

The women worker of the division office observed:

'My office is like a home and my colleagues (referring to male staff) are my brothers. I go to the field most of the time together with technicians and overseers. We organize trainings for the community. Whenever I have a family problem, they try to cooperate with me as much as possible. They take my session if I cannot go to the field.'

- Women worker, DWSS Division Office, Udayapur, 2004

It showed that implementing the policy to encourage women's participation in users' committee was not a work done by female workers alone, male staff were equally involved. Women staff facing family problems to go to the field that were different from male staff, were accommodated in the work by the men at the office. Hence, the hypothesis that involvement of women workers in the drinking water projects could increase women's participation does not turn out to be true.

Further review of women's participation in committees during the Third and Fourth RWSSSP in Udayapur district proved that the project could achieve only the project requirements. Eight projects were implemented, 1 under the TRWSSSP and 7 under the FRWSSSP with the

formation of 15 WUAs in total (some projects had more than one schemes). But 13 WUAs did not have more than 2 female members, another had 1 women member, and the remaining had no women at all.

Since drinking water work was seen a primary responsibility of women and the DWSS had been implementing drinking water programme with female workers, the assumption was that women might have been represented more in users' committee. This data showed it was not so.

When I visited the division office, the female workers as well as the male officers looked relaxed. This was partly due to the delay in the release of the budget. Unlike at the irrigation office, many DWSS staff were present at the office at that time. The female worker was knitting a sweater sitting in the sunshine, because it was winter.

My further discussion with staff members brought out that the role of female worker mentioned above according to the project document was found to be the same. Her role was to encourage users' communities (especially women) to construct toilets and create awareness on hand-washing, to bring about a change in drinking water and sanitation practices to improve hygiene. Also her role was to encourage women users to be on the users' committee. However, what the female worker herself mentioned about her work as quoted above and her knitting a sweater at the office raised concerns on how pro-actively she would do her work.

Such situations cast doubts whether the policy to encourage women's participation in decision-making bodies was being implemented with much attention. Also, one may conclude that the overall outcome of the policy implementation depended on the joint effort of the staff.

Apparently they first worked as colleagues sharing various family needs and responsibilities, after which only they would address gender-based water needs of the community.

8.1.3 Making water flow: the ultimate goal

I got a chance to be at the office for longer periods and observed the day-to-day work of the office staff. I found that the overseers were busy with paper work most of the time, i.e. drawing water system plans to be submitted to higher levels for approvals.

In my interactions with the staff, the technician and assistant technicians shared the problems and challenges they faced with their drinking water supply systems. Now and then they debated why some system was functioning better than another. They talked about leadership as well as technology, and discussed the challenges of water sources and flood events. They were excited while talking about a system that was functioning well, as it satisfied their professional aspirations. Like the female worker, I began to feel at home engaging in the committed as well as friendly discussions with staff members.

Much of the time, the chief of the office was busy receiving male users, who came either to request for an additional budget when headworks were damaged, or to request technical help

for problems they could not solve by themselves. Most of the users who visited the office were from nearby VDCs or had come to the district headquarter for some other official purpose.

One morning, a group of five men users arrived at the office. The overseer took them to the chief, who welcomed the villagers. The users started to share their problem. I observed that the officer and his overseers were quiet and appeared concerned, staying silent while listening to them. They created an impression that, if possible, they would like to do magic to solve the villagers' problems. Also, the way villagers explained their problems suggested they believed that the office could make their miseries disappear. Then, politely, the chief officer said:

'I will try my best to do what I can do from the office to bring water in your home. You follow him (pointing to the overseer) and make an application'

- Chief, Division Office, DWSS, Udayapur, 2005

As in the case of the DOI, this incident indicated that the professional culture of the DWSS encouraged staff to focus on design and increasing supply rather than addressing inequities in access. It was also the expectation beneficiaries had from the office.

What I derived from these observations was that officers' actions to work on gender were influenced by the gender-based relations within the organization and the prevalent professional culture. Officers' intentions to work on gender issues at community level depended first on their time and energy with respect to family responsibility, and whether or not they were convinced that this aspect of their work was based on their day-to-day encounter to meet people's gender-based needs.

8.2 The Regional Drinking Water and Sewerage Office, EDR

Though the regional drinking water office was located in Dhankuta district in the mid-hills, most meetings of the regional office took place at Biratnagar in the Terai because of its central location.

I attended some meetings during the field study period in 2005. There were two such meetings at a hotel at Biratnagar, actually workshops organized by the regional office together with the Financial Administrative Section and National Information Management Section of the central office. One was on the accounting system of the DWSS field offices that emphasized urgency to settle uncleared accounts including those of advances called *Beruju*⁹. The programme ended by rewarding the Chief of the office because he had been able to show progress in maintaining the office accounts properly.

⁹*Beruju*: the uncleared account of the Nepal government was 12% of the national budget in the fiscal year 2011-12. The figure, when accumulated with the past, would be 40% of the national budget in 2013 (THT 2013). In the fiscal year 2004-05 *Beruju* was also an important issue to the organization.

Another workshop was on the preparation for a national data collection on WATSAN practices in the country.

The workshops took place one after another. My participation was possible due to the space provided to me to work as a researcher by the central office in Kathmandu. In both meetings all participants were men and I was the only woman.

During my participation, I stayed at the same hotel as the officers. This was for four days including a day before and after the workshop. This provided an opportunity to meet officers at breakfast and dinner, where I interviewed and interacted with them in formal and informal settings. I also made an assessment of officers' interest to participate in a discussion to reflect on gender issues in their work at the end of the programme on the second day.

Based on my observation and interaction, I analysed organizational priorities, hierarchy, and officers' experience with implementing the policy agenda to increase women's participation in users' committees. I analysed organizational culture in relation to space to think and talk about gender issues.

8.2.1 Round table or rectangular: Organizational hierarchy

As noted, the DWSS division office, Udayapur, as well as the central office in Kathmandu had a friendly atmosphere and I did not observe a strong hierarchy among staff members.

Observations at regional level nevertheless clearly indicated the existence of strong hierarchies among staff of the DWSS.

The workshop on national data collection was an activity under the National Information Management Project (NMIP) of the central office. The meeting was organized to orient division, subdivision and regional level officers on how to collect standardized data on drinking water supply and sanitation for national level monitoring. Altogether 26 male engineers and overseers attended, together with 5 staff from the NMIP, and 2 heads of DWSS sections.¹⁰ In addition, the Deputy Director General (DDG) of the DWSS was present.

He inaugurated the meeting and explained the programme. In his speech, he made efforts to encourage and motivate his staff to work in support of the continued existence of the DWSS.

He said:

'This attempt to collect national level data is crucial for us for two reasons. One is to update the national database on water and sanitation (WATSAN) as we lack it.... Second, DWSS is an apex body for WATSAN, we should produce the database for our existence. I have been asked in NPC about the importance of DWSS and certain sections of our

¹⁰ One was from the Foreign Aid Coordination and Planning Section, the other from the Sewerage Management Section of the central office.

department. This is an opportunity to take a lead and show that we can produce the national level database....'

DDG, DWSS, Biratnagar, 2005

Through his speech he tried to motivate his staff, but his speech also reflected the organizational struggle for existence of DWSS discussed in section 6.3 in Chapter 6.

Next, the NIMP section head introduced the data collection manual detailing what data were required and the data collection principle in brief. Then he handed over the session to a resource person (hired for the workshop) to make the participants familiar with data collection tools.

This session of the workshop was to impart skills as well as harmonize understanding among the officers from field offices on data collection tools. These included focus group discussions, interviews, and social and resource mapping, to be used in the community. The resource person had chosen the role play method. He facilitated the formation of two groups in which the DDG, section heads, and participants from the regional, division, and subdivision offices participated. He then directed one group to play the role of a community and the other to be the data collection team i.e. DWSS staff. However, at this moment, the DDG left the hall without saying anything. Following him the planning officer left, as did a few other officers. Since some participants left without saying anything, it created a side talk among the participants, turning it into a chaotic situation. The resource person tried to bring focus among the participating officers.

But officers showed reluctance to participate in the role play saying they already knew what a focus group discussion was. The NMIP head requested participants to cooperate for the rest of the programme. At the end the role play did not happen.

Enquiry from the head of a section at the central office revealed:

'Rather than one joint workshop, there should have been a parallel session for Chiefs of Division and Subdivision Offices - those who would supervise data collection - and for his engineers and overseers who would collect data.'

He concluded:

'It is not comfortable to sit and perform such exercises with junior staff. How can the DDG participate in the role play?'

Reflecting on what happened, the facilitator said:

'The role play could not be conducted because of the organizational setup of DWSS. When I did a similar exercise with UN staff, even the chief would participate. I wish the DDG could have left the room formally, asking others to continue their participation.'

Here, the organizational hierarchy did not allow the DDG to participate in the role play together with his junior staff. It would have created too much of an informal setting for him and his subordinates.

He had gone out without saying anything, and his immediate junior staff such as head of sections from the central office had done the same, followed by a few other officers. Their action can be interpreted as a sign of respect for the move of their superior, a gesture expected from junior staff in such a hierarchy, but also to maintain their higher status compared to other (field) staff.

All this ultimately affected group dynamics and the success of the exercise. These observations indicate that within the DWSS was a rather strong hierarchical structure and culture.

Acker (1990) mentioned that hierarchy in an organization is often taken for granted feature of an organization. The author, argued that hierarchy in an organisation creates class and that class relations are gender-based. Theorists on gender and organization such as Martin (1990), Acker (1990), and Connell (2003) claimed that organization is not a neutral body, rather it is gender-based. They pointed out that hierarchy in an organization often is the soul of an organization making it function, but also creating different gender and class structures. These structures determine communication among staff and also the possibility to work or not to work on certain issues, and the way an organization functions.

The workshop case had shown the hierarchical structure of the DWSS. That is, a structure where a higher level officer could not openly communicate his actions, neither junior staff could ask about it. Such a structure raises a doubt on how openly officers can talk about gender issues in their work, when a (gender-sensitive) organizational identity should be about providing support to the community when water systems are being constructed.

Also, when high level officials struggled for the continuation of their organizational existence, would talking about gender be possible?

Nowhere in the exercises of the workshop had discussions been held on being sensitive to gender issues while collecting data, neither did high-level officers remark on it in their speeches. The resource person would have addressed the issue considering gender, as was his intention. But, due to lack of cooperation from the participants in the first place, I did not observe him raising this gender aspect, especially on how to incorporate women's experiences on water during data collection into the rest of the programme.

It showed how gender, though remaining an integral part of every activity of an organization like the DWSS, can be overlooked due to prevailing organizational priorities and culture.

8.2.2 Perceptions on gender and organizational priorities

Unlike the DOI, the DWSS had experience with having a gender expert placed in the project implementation unit of the department for the Third and Fourth RWSSSP. I interacted with

officers to understand their opinion on gender in their work as well as on working with the gender expert.

One of the tasks of the gender expert was to design a project implementation procedure in a gender-sensitive manner.

During my interview with her she narrated:

'The ADB was very concerned about the quota and increasing women's presence in the WUA committee. I argued with them that a token participation does not bring in any change. What we needed to do is to develop project implementation mechanisms in such a way that women get information about the project. If women feel it is important, they themselves will come forward. Hence the project implementation procedure was designed to inform women about project benefits expecting their self-awareness to participate in the project (showing a flow chart of the project implementation procedure). However, initially not all officers were enthusiastic to follow this step-wise procedure.'

Accordingly, a social preparation phase of 3 months for each project was included as an implementation form. The key features were an on-site training of six days for users' committee members together with village health workers and community health workers. Another training was for women and youth volunteers, who were selected among beneficiaries, on water use, health, and sanitation practices. Other participants of the training would be leaders of mothers' groups and community health volunteers. Overall, the training was meant for a larger group of community women, youth, and men. It was supposed to be an empowering event for community members.

The Chief engineer was to implement and monitor these activities in addition to his supervisory role for the construction of drinking water supply systems. The gender expert described the process as socializing engineers (Shrestha & Pyakurel 1996).

Many officers found this process tedious. Different engineers had different perceptions and opinions about the gender expert and the work of the department that was to be gender-sensitive. An engineer (hereafter named as E2) who had worked with the DWSS for 33 years, said:

'I and others do not like her as she had an impression we all are corrupt. She was rude and direct and that hurt our sentiments.'

-Personal communication, chief division office, EDR, 2005

The regional head, (hereafter named E3) commented in turn:

'I did not have a problem working with her. Many of us were sensitized about community and gender issues due to her work.'

- Personal communication, Director, Regional DWSS office, Dankuta, 2005

A female sociologist of the DWSS remarked:

'It was not easy to work with her. She was single. Not having children, she often ignored our family problem and made us to go to the field more often.'

- Sociologist, DWSS, Kathmandu, 2006

These views showed that addressing gender in implementing drinking water programmes has to deal with the gender-based ideology of the staff themselves.

Further discussion with officers revealed they had contrasting perceptions on what they perceived as gender progressive change. I interpret them based on their experiences of working with women workers. For instance, this was what engineer E2, belonging to the Madhesi caste, thought about women workers:

'Female workers in the district play an important role to encourage women users to come forward in the users' group. But the difficulty is that one female worker is not sufficient. It is very difficult for me as a chief to send her alone in the field all the time. If I send her with male staff, it can also create problems, for the female worker to be associated with male staff. Hence having two female workers in the office would be better.'

E2 considered the social cultural norms that differentiate women and men staff an issue to work with female staff. He was protective towards women and was sensitive about adhering to social norms and values regarding appropriate behaviour for men and women. He accepted these norms as normal, which is why he found it difficult to accept a work procedure that demanded male engineers to talk to the community and to women. For him, challenging existing gender norms would be difficult.

I found DWSS staff preoccupied with organizational uncertainties. This had implications for their work.

It was evident during the two-day workshop discussed earlier, when I asked them their interest in sharing their experiences with implementing the policy directive to increase women users' participation. I also asked for a feasible date and preferred location for a meeting to be organized later. In the meeting, 16 chief officers from 16 division and subdivision offices participated.

On the first day I distributed a sheet asking them to express their interest. They could return the slip at the end of the day. None of the officers paid attention to it. The next day, only 10 reacted positively after a reminder, and the other 6 showed no interest in such meeting.

I found during these workshops that officers were pre-occupied with issues of organizational restructuring, transfer, and budget rather than the topic of the workshops.

An officer explained:

'According to a government rule, all of us are to be transferred to a new office every two years. Hence, in such a meeting which gives us an opportunity to meet high-level officials from regional as well as central offices, we are interested to know about it. The Head of the Planning Section sometimes has information about my being moved before I know. I

can also address my concern to the regional head as well as the planning head for the same. In addition, you never know if you have been transferred to another department as well.'

These meetings had happened a month after the appointment of the DG - after this position had been vacant for ten months.

One can understand that within such a context of organizational uncertainties, officers working or not working to encourage women users' participation in a committee appeared a micro-issue compared to the macro-issues of organizational restructuring. Neither was there any formal incentive for the same, as discussed in Chapter 6. What had been achieved was based on project monitoring guidelines, where donors such as ADB like to ensure minimum women's participation. Hence, for the DWSS it was more important to show numbers rather than actually being involved in gender-inclusive activities.

What has happened so far with respect to achieving women's participation in committees was either due to the long years of presence of a gender expert at the department or the personal interest of officers. At the time of the study, having 'two women in a users' committee' had become a rule internalized in the organizational culture during programme implementation. And attention had been paid to achieve at least project and policy requirements.

8.3 Central office, Department of Drinking Water and Sewerage

The central office of the DWSS is located in Kathmandu, the capital. It has an ambiance that shows an association of women and drinking water as mentioned at the beginning of this chapter, with the two statues in front of the central office. At the time of the field study, the DWSS worked under the Ministry of Physical Planning and Works (MPPW).

The DWSS had two DDGs and 12 sections as shown in Fig 6.6 in chapter 6. The section offices theoretically were on a horizontal line in the hierarchy. But depending on the importance of the DWSS for the area it worked in, I could observe the hierarchy within the sections themselves.

The DWSS had provided a space to work for me for three months at the office of the Society of Public Health Engineers Nepal (SOPHEN), located inside the central office of the department. It also provided an opportunity to participate in meetings at the DWSS. In this period, I visited the sections and had interviews with officers, focus group discussions, and interactions with staff. I joined a meeting conducted by the DWSS and SOPHEN on participatory decision-making in the water sector and attended an international conference organized in Nepal, together with officers. Below I present my arguments based on my observations from this three-months' continuous stay at the department, followed by a number of other visits in subsequent months and years.

8.3.1 Actors, actions, and tools

Section 6.3 in Chapter 6 showed multiple actors were involved in the implementation of drinking water programmes in the country. The DWSS together with SOPHEN organized a one-day workshop about tools and methods applied by different agencies working in WATSAN on participatory decision-making processes. This workshop was conducted as part of a research titled ‘Innovative Decision Making for Sustainable Water Management in Developing Countries’, a project coordinated by the University of Natural Resources and Applied Life Sciences, Vienna.

The workshop was attended by 18 professionals representing 16 programmes and organizations. I was a participant observer as well as rapporteur. I interpret my observations of the workshop in relation to addressing gender in the WATSAN work of the DWSS.

During the meeting, participants shared the method used in their organizational activities to achieve participatory decision making. However, the sharing came up basically only with many acronyms to refer to the method or tools they were using.¹¹ A participant requested others not to stick to acronyms and emphasized an explanation of the process instead.

He said:

‘Language expresses but also confuses (bhasa aphai bolcha, bhasa aphai almalau chha).’

Nevertheless the meeting ended up with many buzz words on tools. Now and then there was some tense arguing if one particular tool was better than other tools.

I also observed how being able to differentiate one method from another added to the status of participants. Knowledge of different participatory tools and methods clearly was an important reflection of professional maturity and success.

The discussion showed that the sector had already accepted that participatory decision-making was an important part of WATSAN programmes. This meant making sure both men’s and women’s voices and ideas would be included in the process of decision-making. What was obvious was a focus on achieving participatory decision making but in a rather competitive environment.

The DWSS also tried to show its efforts. After a while, an engineer of the department called his junior to ask a sociologist, who was not present from the beginning, to join the meeting. He also asked to call another sociologist to explain the process in the Small Town Drinking Water Supply and Sanitation Project. The sociologists who participated in the meeting tried their best to project the participatory method the DWSS had used to work with the community. Failing to do so could lead to questions about the department's ability.

¹¹Annexe 8 lists those acronyms used to describe tools and methods for participatory decision-making in different organizations working in WATSAN.

What became clear was that jobs related to participation and decision-making at community level were assigned to sociologist and female workers.

8.3.2 Hierarchy within the sections and addressing gender question

The twelve sections of the DWSS central office, six each under two DDGs under the DG of the department, (Figure 6.6) were theoretically horizontal in hierarchy, and of equal importance. Of the twelve, seven were technical sections – sewerage management; electro-mechanics and maintenance; progress evaluation, project design, and monitoring; national information and monitoring; environment sanitation and disaster management; appropriate technology development and rain water harvesting; and water quality improvement and monitoring.

The other five sections were on management. These included Foreign Aid Coordination and Planning, NGO and Community Mobilization, Financial Administration, Human Resource Development, and Administration. The NGO and Community Mobilization section (NCMS) was close to the community and engaged in implementing the policy agenda to increase women's participation in committees. Already in 1996, the section had published a policy document on the participation of NGOs in water supply and sanitation programmes. So I keenly looked into the NCMS to understand its work. However, my observations revealed that the section, which should have been able to talk about gender most loudly, had the lowest priority in the organization, making it difficult for them to work.

When I visited the NCMS in 2005, it had a small office in the DWSS building. The office was a narrow corner room partitioned with a wooden wall, hardly suitable for four people to sit in. It was headed by a senior engineer and two engineers. There was no position for a sociologist or someone with a social science background, which would have been more effective to deal with issues of NGO involvement and community work. The section had the lowest budget of all sections.

At the time of my visit, the head of the NCMS had decorated his office with pictures of theological and religious leaders. He was turned out to be interested in philosophy. Before I could discuss with him about water related work, he immediately asked me whether I would be interested to read some philosophical books and join a philosophical group.

The head of the Planning section, when asked about the role of NCMS and its leadership, commented:

'People, who have enough free time, can spend praying and preaching. I do not have time. I cannot think of praying all the time.'

- Personal communication, Head, Planning Section, 2005

The head of the NGO coordination section returned:

'Neither have I had budget nor work'

The two other engineers assigned to the NCMS also appeared uncertain about what work they should be doing for lack of budget. After a year when I met the officers again, they had published the DWSS newsletter *Darpan*.

Apparently, in a process of adapting to the changes demanded by donors, the section had been established. However, it remained almost idle due to a lack of proper linkages with ongoing work of the DWSS. I could also see that the section was headed by an engineer whose professional identity mismatched with the work of coordinating with other NGOs and taking a lead. As a chief he did not appear to be a person who could argue and project the importance of his office to a higher authority to obtain funds.

8.3.3 Increasing women's participation in perspective

There were different views among the officers on increasing women's participation in drinking water programmes, as became clear during a focus group discussion in which the officers, who appeared open to the idea of gender initially, later expressed their doubt, confusion, frustration, and anger with the concept, which was a reflection of their personal experiences.

Officers thought that the need to have a quota for women users in users' committee was to empower women in Nepalese society, who often are not present at meetings. One of them showed frustration with the concept of empowerment this way:

'Can I say my wife is not empowered, when I work the way she likes. Many times, I find it difficult to do the things that she does not like. I do not understand why we say women are not empowered.'

- Senior engineer, DWSS, 2005

Another officer added:

'We think women cannot do. But when they are determined, they do. Gandhi said his movement is a success because of women. Prachand said his movement is a success because of women. Women are more determined than men, once they think they need to work towards something. I have witnessed an attack of Maoist Women Militia. I do not think women are disempowered.'

- Senior engineer, DWSS, 2005

A male and a female sociologist, when interviewed about their perceptions on gender and DWSS work, both agreed on the need to have women in decision-making forums.

They opined:

'It takes time to achieve women's participation in formal water work due to the socio-cultural norms and gender divisions of work at home. We have been trying and after achieving minimal participation, we have asked user committees to have at least one

woman member in a crucial position of the committee. Our challenge is to meet sanitation targets and these can be achieved through women's involvement.'

- Sociologists, DWSS, 2005

Their view showed that they were primarily concerned with meeting sanitation targets, seeing women's participation as an instrument towards reaching these goals.

More so apparently, achieving a higher number of women in decision-making has been perceived differently by different officers. This would have implications for the final outcome. It could be the reason that the overall outcome of the policy in drinking water sector was not different from that in the irrigation sector. Except that the idea of women and gender was more easily talked about and welcome in the organization, thanks to a longer history of gender mainstreaming in the department compared to the DOI.

8.3.4 Division of roles to address gender

Though addressing women's need in drinking water design was at the core of the gender argument to increase women's participation in decision making bodies, many officers were found to be reluctant to work with this issue. I link this reluctance to gender-based divisions of roles in the organization. Sociologists and women workers, who were very few among the staff of the DWSS as shown in Chapter 6, were appointed to mobilize the community as well as women. The engineers who formed the majority of human resources of the DWSS, would work on design. All field offices and sections were headed by engineers. Though there was a demarcation of the roles among the staff to work on social and gender issues and on the technical aspects of water supply, the ultimate outcome of DWSS efforts to implement the policy directive to increase women's participation on users' committees and designing gender-sensitive structures depended on the engineers who were in management.

This division of roles in the DWSS had created a demarcation for some officers to address gender in their work, who had not yet realized the different experiences of men and women in the drinking water sector.

This is the experience shared by an engineer towards his retirement, on how his understanding about gender changed over time, and how he might have failed to address gender in his work.

The head of the Information Management section mentioned how his thoughts were gender-blind at the beginning of his career and how they were after 15 years of service, on account of different life experiences:

'I used to think I know design. I am an engineer. But my belief changed when I was designing a kitchen for my house. I realized that my design did not meet my wife's need. She came up with different suggestions, which I never realized.'

He mentioned the first incident that sensitized him about gender:

'The first time I heard about gender was in 1992, when a gender expert from the IRC showed us a documentary in a workshop. In the documentary, a camera first focused on a village, then moved towards a community hall where a drinking water meeting was taking place. Outside the hall were only men's Hero bicycles. It showed the male dominance in the meeting. Then the camera moved to the village, where women were carrying water pots and digging water canals. First time I realized gender differences in my work.'

He further narrated his life experience on why he would think gender exists:

'At this age I see the life experiences of men and women are different and it matters. As a man I always aspired to get promotion, a higher degree, and achieve something. At this age, I feel contented. But I saw that contentedness in my wife's eye 20 years ago when she delivered a baby. I reflect sometime why I took so much time to feel this contentedness. This entire realization I have now, but not when I was in villages to design community water supply systems. I doubt whether I could address gender concerns in my work.'

His personal narratives showed that many engineers who were to implement water programmes had not internalized the issues so far. That makes working with the policy directive rather a surface exercise.

8.4 Conclusion

In this chapter, I showed that the importance of improving the participation of women in users' committees was rather well accepted within the DWSS, especially when compared to the DOI. At the same time, however, the way policy had been implemented was no different from that in the DOI. The reason for the acceptance of the policy was likely to be an outcome of years of donor influence, linked to the more pressing need of the DWSS to justify its own existence by accommodating itself to demands from outside (especially from donors).

The DWSS had to address drinking water needs as well as sanitation in a community. The latter was perceived to be closely connected with women's roles in Nepalese society, as women (in their domestic role) are seen to be responsible for health and hygiene at home. So, women users were encouraged to participate in committees, especially to act as a catalyst for transforming sanitation-related practices. It was not linked to issues of improved access to water, let alone with gender equity.

Although most officers were aware of and familiar with the policy target of improving the participation of women, implementation was limited. This was largely because of the pre-occupation of officers to meet national targets on coverage, and also linked to the organizational struggle for existence. Absence of proper incentives to implement the policy agenda also lessened its effective implementation. What had been achieved so far was the result of gender norms of the office that a committee should be constituted of two women, at least. Some others might have worked hard in this respect because of their personal convictions, regardless of whether they had an engineering or social science background.

Importantly, I also showed a limitation of job description of officers, where none of the officers were directly assigned to ensure women's participation in a users' committee. The women workers whose position was created assuming women to women communication could lead to an effective outcome, also did not have increasing women's participation included in their job descriptions. At the same time, the NGO Coordination and Community Mobilization Section of the DWSS, that could have been active in addressing gender concerns, lacked proper human and financial resources. So far what had been achieved in terms of women's participation in DWSS work can be associated with its historical engagement with gender experts and gender mainstreaming exercises, that had made the inclusion of two women in user's committees an organizational norm.

Chapter 9: Conclusions

'Ki na dukha garnu bhayo! Ke logne manche thiyenan ?(Why did you go through all this trouble? Were there no men around?)'

- Chief, district irrigation office, Kavre, 2001

The thesis began with this question in Chapter 1, which an officer posed to a woman who visited him to ask for a service from his office to her and other villagers. I tried to understand his enquiry '*were there no men around?*' against a context in which government officials were being asked to encourage women's participation and leadership in water programmes. This concluding chapter presents a synthesis of the data and its overarching findings.

Participatory policies and improving the participation of women in formal decision-making bodies have been extensively advocated as a means to reduce existing gender gaps in water access, control, and management. This, in turn, has been (and continues to be) considered an important step towards the empowerment of women, allowing them to voice their concerns and influence the decisions made in public forums such as water users' associations. Following these ideas, water policies in Nepal have aimed to improve women's participation in both irrigation and drinking water users' committees since the early 1990s.

This study investigated the effectiveness of these 'gender progressive' policies and looked at how they have been translated into actual practice. It enquired whether improving participation in formal decision-making bodies was indeed happening, and tried assessing whether this is the only or the most effective entry-point to achieve gender equity in water management.

The first overall conclusion of the study is that in formulating a gender and water agenda, policies in Nepal basically have interpreted gender by identifying women as a separate target group, a social category that deserved special attention, instead of treating gender as a question of social equity and justice.

The related sub-conclusion is: Unless gender in water policies is part of a broader, social equity agenda, addressing gender equity remains nominal and instrumentalist.

The second major conclusion is that planned policy attempts to improve women's participation in water management do not follow linear planning steps. The implementation of policies is importantly shaped by organizational cultures, incentive structures, and professional identities, but also depends on the personal convictions and practices of individual implementers.

The third conclusion is that the linkages between women's participation in WUAs and their access to and control over water are much less straightforward and direct than projects and policies assume and hope.

In the next sections, I go into each of these three overarching conclusions in more detail.

9.1. Formulation: linkages between water, development, and gender equity

In chapter 2, I examined the development plans and policies of the Nepalese government to analyse how the government in different political regimes and times had conceptualized the linkages between development and equity. The analysis of plan documents up to the First Interim Plan 2010 showed that, over time, the gender agenda of Nepal's planned development had become importantly linked to the global agenda on women and gender.

In the initial period of planned development (1956-1980), issues around inequity were mainly identified as differences in landownership among citizens. Gender-based inequities were implicitly subsumed under such class-based inequities. When policies mentioned women, it was to emphasize their roles as mothers and caretakers of households. Policy efforts focused on ways to enhance their capacities in these roles. Right from the 1980s onward, the 'women question' was interpreted as the exclusion of women from development and economic growth of the country.

Where water sector development was concerned, until the 1980s it was merely focused on the expansion of water-related infrastructure. In that period, the concerns in the Nepalese water bureaucracy were centred around using its financial and human resources to achieve the goal of expansion of water infrastructure. The irrigation sector was guided by the national need to improve economic growth. The drinking water sector was guided by an international commitment towards achieving better health and hygiene. It was only towards the late eighties, that both water sectors started realizing the need for participation of users in project design and water management.

Later development plans (1997- 2007), that is, the Eighth, Ninth and Tenth Plans emphasized women's empowerment and the participation of women, but this emphasis was not reflected in the respective irrigation and drinking water chapters of the development plans. Attention to gender in water policies remained restricted to specific clauses that stipulated a minimum percentage of women in committees of WUAs. These clauses were not accompanied by more detailed explanations of why and how women's participation could be improved, nor were details provided in programme and implementation procedures to back them up. Where the drinking water sector did link women's participation in WUA committees to their role in drinking water and health, the linkages between gender and water were less clearly spelled out and visible in irrigation.

9.2 Outcomes: linkages between participation and access to and control over water resources

The chapters (3, 4 and 5) in Part I of the thesis analysed gender-based access to water and its relationship with users' participation in WUAs. The conclusion of this analysis is that attempts to improve women's participation in formal decision-making domains (here: users' organizations) as such will not be enough to ensure users' access to water and redress gender-based inequities in access to and control over water.

The in-depth study of three irrigation systems and two drinking water systems showed that water access and control are not just determined within the formal domain of users' associations. Access to irrigation water was found to be a function of an individual or group's bargaining power to negotiate for water, with many of these negotiations happening at farming level, between irrigating neighbours. In the case of drinking water systems, the ability and capability to pay was important in determining access to and control over piped water. In the absence of money, maintaining good relations with neighbours proved important to gain access in the case of private tube-wells and taps.

This means that users' access to and control of irrigation and drinking water was only partially arranged through (their participation in) users' organizations and committees. In many instances, the organization of water distribution took place outside the domain of the users' organization. This indirect link between access and participation was governed by social power relationships among the users, with access being akin to a 'bundle of powers', being co-shaped by access to technology, capital, markets, labour, knowledge, authority, identity, and social relations (see Ribot & Peluso 2003:173).

In drinking water systems, the technical specificities of the infrastructure (a piped system) made it relatively easy for WUAs to control water distribution: the taps of those who failed to pay their water fees could easily be closed. This was very different in the open surface-irrigation canal systems, where it was difficult to divert water 'illegally' to one's field. For WUA leaders to engage in water distribution could raise conflicts with landlords. In other words, technological differences between drinking water systems and irrigation systems made water control more difficult in the latter, but also made 'free-riding' easier here. As a consequence, even when drinking and irrigation WUAs were represented by the same people, their behaviour and management decisions were different.

Another important finding was the difference in the fee collection between irrigation and drinking water systems. In the latter, fee collection was organized based on the long-standing practice that piped water needed to be paid for. The first Water Tax Act 1966 and later the Decentralisation and Local Governance Act already perceived WUAs as being financially responsible for the operation and maintenance of drinking water systems.

This responsibility gave WUAs a strong incentive to favour those water users who could pay for water, and to close those community taps the users of which failed to pay (usually poor women and men).

That is to say, findings from the study show that a strict policy of cost recovery and financial autonomy of WUAs may work against the objectives of (gender) equity.

Users' associations were found to be often more concerned and busy with bringing in external resources for system maintenance and expansion than with looking after the internal issues of water distribution. The first could add to the social prestige and credibility of the WUA leaders, whereas the second was considered tedious, and entailed a risk of entering into conflicts with users. The ability to understand official matters and to deal with government officials was seen as important features of WUA leaders by many water users.

Field observations on users' participation in WUA meetings showed that (actually, nominal) participation did not automatically translate into voice and power. The few women users who were attending meetings were there often because of the 'opportunity cost' of participation for the family: since their wages were lower, it was less costly for the household that they participated instead of their husbands. Many women from poor households, however, never did attend meetings. This was not because they did not see the benefits of participation, but because they expected not to be heard.

Some men and women tried influencing decisions or voicing their concerns through male relations or friends. It was obvious that influence in meetings was deeply shaped by prevailing social relations of power. Those with less education and income, and belonging to lower caste groups had much fewer chances to be heard. A clear example was the complete ignoring of the request of some poorer men and women to make labour contributions to maintenance and construction proportional to the size of one's irrigated land.

A woman's ability to exercise agency, or her ability to articulate effectively concerns at WUA meetings depended on the gender-based hierarchies in which she was situated (Kabeer 1994). When her ability to raise her voice in meetings was limited, she would often choose other channels through which she could express her concerns or articulate her needs. Women from female-headed households were found more vocal at meetings than those from male-headed households.

In sum, power dynamics among users, that were only partly played out within formal decision-making domains, played an important role in shaping women's voice about and access to water. These findings corroborate those of earlier work on gender and participatory approaches, (for instance, Meinzen-Dick & Zwarteveen 1998; Chhetri 1999; Cleaver 1999; Kanji 2003; Zwarteveen et al. 2010).

The implication is that attempts to improve women's participation in formal domains of user organization will not be enough by themselves to ensure users' access to water and redress gender-based inequities in water.

9.3 Implementation: linkages between policy and participation

Part II (Chapters 6, 7, and 8) concludes that the implementation of gender-related policy objectives importantly depends on their translation by a diverse group of implementers, who have different perspectives, beliefs, and norms. I found that officers' beliefs and norms were partly shaped by the organizational and professional culture to which they belonged, but were also formed by their individual identity, socialization, and personal convictions.

Implementation practices in the irrigation sector were dominated by issues of cost recovery and efficiency. In the drinking water sector, issues of organizational existence, water quality, and health assumed a high priority among the implementing staff. These implementation priorities were not directly related to gender concerns, even sometimes in conflict with them. This was why, in the day-to-day reality of implementation, they tended to overshadow discussions about social equity, fair access, and control.

The meaning of gender equity and the intended objectives of planned efforts to improve women's participation were differently interpreted by different implementers at all levels in both sectors, sometimes leading to controversies and differences of opinion that stood in the way of effective implementation. In the irrigation case, the gender agenda of the water policy contradicted how most technical experts involved in the implementation of water projects perceived their roles.

Both formal and informal incentive structures defined professional performance, status, and reputation primarily in terms of technical achievements. Most DOI staff defined and ranked themselves and others according to these terms. Chapter 7 showed how a Chief Engineer, who was motivated to address questions of gender, tried justifying this unusual professional behaviour by combining his gender-sensitive efforts with conscious displays of his technical skills.

Though women's and gender issues were more easily talked about in the drinking water sector, here effective implementation was overshadowed by issues of organizational survival and restructuring. There were many governmental and non-governmental organizations implementing drinking water programmes at national level, with which the DWSS had to compete. In the meantime, the department itself had been restructured in such a way that its very status as the leading government agency in drinking water had been put into question.

In both departments, the responsibility to address women's participation in users' committees had been assigned to social scientists.

However, their number and status was low, and they were not represented in the management. Hence, the ultimate outcome of the policy effort lied with heads of divisions, sections, and units and these were all engineers.

In both departments, these water engineers, who formed the majority of the staff, had difficulties linking their technical mission of constructing structures to the gender mission of

addressing inequities, even though gender had long figured prominently in drinking water policies.

The ultimate outcome of the policy implementation is still ambiguous.

Chambers (1988) had said that each profession has its own physical territory and even its heartland where its practitioners feel most secure and most able to exercise their skills. Complementing his analysis, this study found that the 'heartland' of the irrigation and drinking water departments was formed by the discipline of civil engineering. Both departments were dominated by engineers, whose professional status and reputation were primarily linked to their engineering and mathematical skills as used in the design and construction of water systems. So, their professional territory - and the place where they felt most at ease - was the design and construction of systems. Also, most water users expected department staff to come up with technical solutions to their water problems rather than encourage (women) users and representatives to participate in WUA meetings. The opening quote of this thesis is an example that shows officers' unease about dealing with women users', who take leadership in local affairs. In Chapter 7 I also showed how staff responsible for the institutional development of WUAs considered gender a topic of relatively low priority.

In sum, the professional culture of water sector bureaucrats proved to be a limiting factor in the effective translation and implementation of the policy. Much of what had been achieved so far in terms of improving women's participation in WUAs had been the effect of personal attitudes and actions of some individual officers. To put it in theoretical perspective, it was basically a result of the individual discursive consciousness (Giddens 1984) of some of the implementers' towards gender and water issues.

Earlier studies on gender mainstreaming in bureaucracy have pointed to the lack of gender awareness among implementers as an important barrier to achieve gender-specific policy goals (Longwe 1997). More than officers' lack of individual awareness, I found in this study the organizational and professional culture to be a major limiting factor for implementers to think and work on gender in their programmes and take up the gender agenda of water policies. This is in line with what some other scholars have found (see Miller 1998; Ahmed 2002; Standing 2007).

Some engineers interviewed for this study clearly displayed concern about women and the poor, and had some vision of gender equity. However, many saw such concerns as relatively far removed from their day-to-day work, because they defined their professionalism mainly in terms of technical expertise. For them, their job consisted of solving water problems (irrespective of whether these were the problems of men or of women) through technical innovations, rather than working to increase women's participation in users' committees. The latter was a task they would readily leave to social scientists.

References

- Acharya, Meena and Lynn Bennett. 1981. *Rural women of Nepal: an aggregate analysis and summary of 8 village studies*. Centre for Economic Development and Administration, Kathmandu: Tribhuvan University.
- Acharya, Meena and Lynn Bennett. 1983. *Women and the subsistence sector: economic participation and household decision-making in Nepal*. World Bank Staff Working Paper 526, Washington: The World Bank.
- Acharya, Meena. 2003. "Changing gender status-achievement and challenges", In: *Population monograph of Nepal*, Vol. II. Edited by Central Bureau of Statistics, Kathmandu: Government of Nepal.
- Acharya, Meena. 2011. "Approaches to development and gender- an impact in Nepal's policies." In *the seminar on Economic empowerment of youth: an analysis from gender perspective*, Kathmandu: FES.
- Acker, Joan. 1990. "Hierarchies, jobs, bodies: A theory of gendered organizations". *Gender and Society*, 4(2):139-58.
- ADB. 1996a. *Report and recommendation of the President to the Board of Directors on a proposed loan to the Kingdom of Nepal for the Fourth Rural Water Supply and Sanitation Sector Project. RRP NEP 26063*. Manila: Asian Development Bank.
- ADB. 1996b. *Report and recommendation of the President to the Board of Directors on a proposed loan to the Kingdom of Nepal for the Second Irrigation Sector Project*. Manila: Asian Development Bank.
- ADB. 1997. *Project performance audit report on the Rural Water Supply Sector Project in Nepal*. Manila: Asian Development Bank.
- ADB. 2001. *Report and recommendation of the President to the Board of Directors on a proposed loan to the Kingdom of Nepal for the governance reform program RRP: NEP32238*. Manila: Asian Development Bank.
- ADB. 2003. *Gender and development: Our framework policies and strategies*. Manila: Asian Development Bank.
- ADB. 2004. *Fourth Rural Water Supply and Sanitation Sector Project. Loan 1464-NEP.SF. in Nepal: Project Completion Report*. Manila: Asian Development Bank.

- ADB. 2006. *Nepal: Irrigation Management Transfer Project- Project completion report*, Manila: Asian Development Bank.
- ADB. 2007. *Nepal: Second Irrigation Sector Project- Project completion report*. Manila: Asian Development Bank.
- ADB. 2009. *ADB loan no 2102- Nepal. SF. and OFID loan no 1060P: Community- managed Irrigated Agriculture Sector Project. Aide Memoire of Loan Review Mission*. Manila: Asian Development Bank.
- ADB. 2010a. *Overview of gender equality and social inclusion in Nepal*. Manila: Asian Development Bank.
- ADB. 2010b. *Nepal: Small Town Water Supply and Sanitation Sector Project- Project Completion Report*. Manila: Asian Development Bank.
- ADB. 2012. *Nepal: Community-based Water Supply and Sanitation Sector Project- Project Completion Report*. Manila: Asian Development Bank.
- Adhikari, Baburam. 2011. "Sichai mantralaya antargat sansthatgat sudhar (Institutional improvement within Ministry of Irrigation)". In; *Conference on Micro to mega: irrigation for prosperous Nepal*, 13-14 July 2011. Nagarkot: DOI/ IWMI/ INPIM.
- Adhikari, Jagannath. 2008. *Land reform in Nepal: problems and prospects*. Kathmandu: Action Aid, Nepal.
- Adhikari, Jagannath, B.B. Nepali and Radha Gurung. 2009. *Access to land and marginalisation in Nepal: a political economic approach*. SIRF/RF/07- Social Inclusion Research Fund, Kathmandu: SNV Nepal.
- Adhikari, Jagannath and Mary Holey. 2011. *Everyone is leaving - who will sow our fields? The effects of migration from Khotang district to the Gulf and Malaysia*. Kathmandu: Swiss Agency for Development and Cooperation Nepal.
- Agarwal, Bina. 1994. *A field of one's own: gender and land rights in South Asia*. Cambridge South Asian Studies 58. Cambridge: Cambridge University Press.
- Agarwal, Bina. 1997. "Bargaining and gender relations: Within and beyond the household." *Feminist Economics*, 3(1):1-51.
- Agarwal, Bina. 2001. "Participatory exclusions, community forestry and gender: An analysis for South Asia and a conceptual framework". *World Development*, 29(10): 1623-48.
- Ahmed, Sara. 2002. "Engendering organisational practice in NGOs: the case of Utthan". *Development in Practice*, 12(3-4):. 298-311.
- Ahmed, Sara. 2005. *Flowing upstream: empowering women through water management initiatives in India*. Environment & Development series, Ahmedabad: Centre for Environment Education.

- Amatya, Saphalya. 2006. *Water and culture*. Kathmandu, Nepal: Jalsrot Vikas Sanstha.
- APROSC. 2003. "Economic reform and the status of women in Nepal." In: *Tracking gender equity under economic reforms - Continuity and change in South Asia*, Edited by Mukhopadhyay and Ratna M Sudarshan, India and Canada: Kali for Women and International Development Research Centre, pp. 123-52.
- Benjamin, Paul, Wai Fung Lam, Elinor Ostrom and Ganesh Shivakoti. 1994. *Institutions, incentives, and irrigation in Nepal*. USA: US Agency for International Development and Global Bureau Democracy Center.
- Bennett, Lynn. 2002. *Dangerous wives and sacred sisters - social and symbolic roles of high caste women in Nepal*. Kathmandu: Mandala Book Point.
- Bennett, Lynn, Dilli Ram Dahal and Pav Govindasamy. 2008. *Caste, ethnic and regional identity in Nepal: further analysis of the 2006 Nepal demographic and health survey*. Maryland: Macro International Inc, USA.
- Berry, Kate A. and Eric Mollard. 2010. *Social participation in water governance and management: critical and global perspectives*. London: Earthscan James & James.
- Bhadra, Chandra. 1992. "Women as managers - experience in Nepal." In *The WEDC International Conference Proceedings*. UK: WEDC. pp.14-17.
- Bhadra, Chandra. 2001. "Gender and development: Global debate on Nepal's development agenda". *Contributions to Nepalese Studies*. 28(1): 95-107.
- Bhadra, Chandra and Bhaskar Singh Karky. 2002. *Assessment of the role of women in water resources in the Annapurna Conservation Area*. Kathmandu: King Mahendra Trust for Nature Conservation.
- Bhadra, Chandra and Bhaskar Singh Karky. 2003. "Role of women in water resources use: study in ACAP." In the *Water knowledge experiences from Annapurna Conservation Area*. Edited by Ganga Jung Thapa and Bhaskar Singh Karky, Kathmandu: King Mahendra Trust for Nature Conservation, pp. 93-109.
- Bhadra, Chandra. 2007. "International labour migration of Nepalese women: the impact of their remittances on poverty reduction". Working Paper Series No 44, Bangkok: Asia Pacific Research and Training Network on Trade. ARTNeT.
- Bhadra, Chandra. 2009. "Nepal ma mahila sashktikaran ra laingik samanata ka pahalharu. (Efforts on Gender equality and women's empowerment in Nepal)." *Vikash a Journal of Development*. 30.2.
- Bhatt, G. R., D. Gyawali and D. G. Ramsey. 1981. *Water: the key to Nepal's development - a brief account of the country's water resources development*. Kathmandu: Ministry of Water Resources.

- Bhattachan, Krishna. 2001. "Sociological perspectives on gender issues in changing Nepalese society." In: *Gender and Democracy in Nepal*. Edited by Laxmi K Manandhar and Krishna B Bhattachan. Kathmandu: Central Department of Home Science, Women Studies Program, Tribhuvan University and Friedrich-Eber-Stiftung, pp. 84-105.
- Bhattarai, Ghanshyam 2007. "Water Supply and Sanitation Sector Policy in Nepal", In: *The methodological workshop on capacity building for enhancing local participation in water supply and sanitation interventions in poor urban areas*. 10-12 February Dhaka: ITN-BUET.
- Bhujju, Ukesh Raj, Puspa Ratna Shakya, Tej Bahadur Basnet and Subha Shrestha. 2007. *Nepal biodiversity resource book - protected areas, Ramsar sites and world heritage sites*. Kathmandu: ICIMOD.
- Bista, Dor Bahadur. 1991. *Fatalism and development*. India: Orient Longman.
- Blaikie, Piers M., John Cameron and David Seddon. 2001. *Nepal in crisis: growth and stagnation at the periphery*. Delhi: Adroit Publishers.
- Boelens, Rutgerd and Gloria Davila. 1998. *Searching for equity: conceptions of justice and equity in peasant irrigation*. Assen, The Netherlands: Van Gorcum..
- Boelens, Rutgerd and Margreet Zwarteveen. 2002. "Gender dimensions of water control in Andean Irrigation". In the *Water rights and empowerment*. Edited by Rutgerd Boelens and Paul Hoogendam. The Netherlands: Koninklijke van Gorcum. pp: 75-109
- Bourdieu, Pierre. 1977. *Outline of a theory of practice*. Cambridge Studies in Social Anthropology 16. Cambridge and New York: Cambridge University Press.
- Broich, John. 2007. "Engineering the Empire: British water supply systems and colonial societies, 1850-1900." *Journal of British Studies*, 46(2): 346-65.
- Brown, T. Louise. 1996. *The challenges to democracy in Nepal: a political history*. London and New York: Routledge.
- Bruins, Bert and Annelies Heijmans. 1993. *Gender biases in irrigation projects: gender considerations in the rehabilitation of Bauraha Irrigation System in the district of Dang*. Kathmandu: SNV Nepal.
- Carson, Wendy. 1999. "Rhetoric to reality: a psychological approach". In: *Gender works: Oxfam experiences in policy and practices*. Edited by Fenella Porter, Ines A. Smyth, and Caroline Sweetman. UK: Oxfam GB publication, pp.152-63.
- CBS. 1999. *Women in Nepal some statistical facts*. Kathmandu: National Planning Commission, Central Bureau of Statistics, His Majesty's Government of Nepal.
- CBS. 2004. *Women in Nepal some statistical facts 2004*. Kathmandu: National Planning Commission, Central Bureau of Statistics, His Majesty's Government of Nepal.

- CBS. 2005. *Poverty Trends in Nepal:1995-96 to 2003-04*. Kathmandu: Central Bureau of Statistics, His Majesty's Government of Nepal.
- Cernea, Michael M and Ruth Suseela Meinzen-Dick. 1994. *Design for water user associations: organisational characteristics*. USA: Environment Department, The World Bank.
- Chambers, Robert. 1988. *Managing canal irrigation: practical analysis from South Asia*. Wye Studies in Agricultural and Rural Development. Cambridge: Cambridge University Press.
- Chandrasekharan, S. 2004. "Nepal: stalemate continues: who is benefited?". [<http://www.southasiaanalysis.org/notes3/note207.html>] Accessed on 2010.08.03.
- Chhetri, Ram B. 1999. "The rhetoric and realities of people's participation in conservation and development in Nepal: An anthropological perspective." In *The anthropology and sociology of Nepal: cultures, societies, ecology and development*. Edited by R. B. Chhetri and O. P. Gurung. Kathmandu: SASON, pp. 191-211.
- Cleaver, Frances. 1999. "Paradoxes of participation: questioning participatory approaches to development." *Journal of International Development*, 1(4): 597-612.
- Cleaver, Frances. 2012. "Understanding gendered agency in water governance." In: *Diverting the flow - gender equity and water in South Asia*. Edited by Margreet Zwarteveen, Sara Ahmed and Suman Rimal Gautam. New Delhi: Zubaan, India, pp. 31-64.
- Connell, R.W. 2003. "Developing a theory of gender as practice: notes on Yancey Martins Feminist lecture". *Gender and Society*, 17(3), 370-72.
- Dangal, Rameshwor. 2005. "Administrative culture in Nepal: Does it reflect the dominant socio-cultural values of Nepal?" MPhil Dissertation in Public Administration. Norway: Department of Administration and Organisation Theory, University of Bergen.
- Deraniyagala, S. 2005. "The political economy of civil conflict in Nepal." *Oxford Development Studies*, 33(1): 47-62.
- Des Chene, Mary 1996. "In the name of Bikas." *Studies in Nepali History and Society*, 1(2): 259-70.
- Dhungel, Dwarika N. 2004. "Decentralised governance: a perspective for Nepal". Paper presented at Seminar on *reforming governance - perspectives and experiences*. December 16-17, 2004, Bangalore, India: Center for Public Policy, Indian Institute of Management.
- Dixit, Ajaya and Shreshna Basnet. 2005. *Recognising entitlements and sharing benefits: emerging trends in Nepal's hydropower terrain*. Dialogue on Dams and Development: Nepal. Kathmandu: Quality printers.
- Dixit, Ajaya, Ngamindra Dahal and Kanak Mani Dixit. 2002. *Higher Education in Water Resources Management in Nepal*. Kathmandu: SaciWATERs.

- DOI. 1999. *Department of irrigation from past to present*. System Management and Training Program. Lalitpur: Department of Irrigation.
- DOI. 2004a. *Shichai pustika, 2061, published on the occasion of 52 Irrigation Day*. Lalitpur: Department of Irrigation, Ministry of Water Resources, Nepal.
- DOI. 2004b. *Sichai bibhag ko karyabidhi, 2061BS. (The working modalities of the Irrigation Department, 2004)*. Lalitpur: Department of Irrigation, Ministry of Water Resources, Nepal.
- DOI. 2005. *Sichai diary (Irrigation diary)*. Lalitpur: Department of Irrigation, Ministry of Water Resources, Nepal.
- DOI. 2010. *Shichai barshik pustika (Irrigation annual book) Fiscal Year BS 2066/67*. Lalitpur: Department of Irrigation, Government of Nepal.
- DWSS. 1988. *Khanepani tatha dhal nikash bibhagko sanchhipta parichaya (Short introduction of Department of Drinking Water Supply and Sewerage), Year BS 2045/46*, Kathmandu: His Majesty Government, Ministry of Housing and Physical Planning, Department of Water Supply and Sewerage.
- DWSS. 2004. *Khanepani tatha dhal nikash bibhagko karyabidhi BS 2061 (Working modality of Department of Drinking Water Supply and Sewerage)* Kathmandu : Department of Water Supply and Sewerage, Nepal.
- DWSS. 2011. *Nationwide coverage and functionality status of water supply and sanitation in Nepal*. National Information Management Project, Kathmandu: Department of Water Supply and Sewerage, Nepal Government.
- DWSS. 2013. *Job description of DWSS employee*. Department of water supply and sewerage www.dwss.gov.np. Accessed on 8.8.2013.
- Ely, Robin J and Debra E Meyerson. 2000. "Theories of gender in organizations." *Research in Organizational Behaviour*, 22: 101-51.
- Escobar, Arturo.1995. *Encountering development: the making and unmaking of the Third World*. Princeton studies in culture, power, history. Princeton: Princeton University Press.
- Ferguson, J.1990. *The anti-politics machine: development, de-politicisation and bureaucratic power in Lesotho*. Cambridge: Cambridge University Press.
- Francis, Jennifer, Christine van Wijk and Dick de Jong. 2000. "Remember gender: it makes a difference." *Waterlines*, 18(4): 25-28.
- Fraser, Nancy. 1997. *Justice interruptus: critical reflections on the "postsocialist" condition*. New York: Routledge.
- Fraser, Nancy, Hanne Marlene Dahl, Pauline Stoltz, Rasmus Willig. 2004. "Recognition, redistribution and representation in capitalist global society: An interview with Nancy Fraser." *Acta Sociologica*, 47(4): 374-82.

- Giddens, Anthony. 1984. *The constitution of society: outline of the theory of structuration*. Cambridge: Polity Press.
- Giddens, Anthony. 1990. *The consequences of modernity*. Cambridge: Polity Press..
- Gilmartin, David. 1999. "The irrigating public: the state and local management in colonial irrigation". In: *State, society and the environment in South Asia*. Edited by Stig Toft Madsen. Surrey: Curzon Press, pp. 236- 65.
- GON. 2006. *Agriculture monograph*. Kathmandu: National Planning Commission, Central Bureau of Statistics, Government of Nepal.
- GON. 2007a. *Three Year Interim Plan 2007/08-2009/10*. Kathmandu: National Planning Commission, Government of Nepal.
- GON. 2007b. *Vision paper 2007: New infrastructure-foundation of new Nepal*. Kathmandu, Nepal: Government of Nepal, Ministry of Physical Planning and Works.
- GON. 2007c. *Development of database for irrigation development in Nepal*. Kathmandu: Centre for Engineering Research and Development, Ministry of Water Resources, Government of Nepal.
- GON. 2011a. *Nepal population report 2011*. Kathmandu: Ministry of Health and Population, Government of Nepal, Nepal.
- GON. 2011b. *Water Supply Sanitation and Hygiene Sector Status Report 2011*. Kathmandu: Government of Nepal, Ministry of Physical Planning and Works, Water Supply and Sanitation Division, Sector Efficiency Improvement Unit.
- GON. 2012. *National population and housing census 201- National report*. Kathmandu: Government of Nepal, National Planning Commission Secretariat, Central Bureau of Statistics.
- Grillo, R.D. and R.L Stirrat. 1997. *Discourses of development: anthropological perspectives*. London: Bloomsbury Academic.
- Grindle, M. S. and J. W. Thomas 1989. "Policy makers, policy choices, and policy outcomes: The political economy of reform in developing countries." *Policy Sciences*, 22(3-4): 213-48.
- GSEA. 2012. "Water supply and sanitation." *Sectoral perspective on gender and social inclusion, Gender and social exclusion assessment 2011. Secotoral Series: Monograph 7*. Kathmandu: Asian Development Bank, Department for International Development, UK and The World Bank Nepal.
- Gurung, Harka. 2006. "Inclusive human development in Nepal" In: *Nepal: readings in human development*. Edited by S.R. Pande, S. Tropp, B. Sharma and Y. R. Khatiwada. Kathmandu: United Nations Development Program. pp: 71-80

- Gyawali, Dipak and Ajaya Dixit. 2010. "The construction and destruction of scarcity in development: water and power experiences in Nepal." In: *The Limits to scarcity: contesting the politics of allocation*. Edited by Lyla Mehta, London and Washington: Earthscan, pp. 233-52.
- Gyawali, Dipak. 2001. *Water in Nepal*. Kathmandu: Himal Books.
- Hagen, Toni. 1998. *Nepal - The Kingdom in the Himalaya*. Nepal: Himal Books.
- Hajer, Maarten A. 2005. "Coalitions, practices and meaning in environmental politics: from acid rain to BSE." In: *Discourse theory and European politics*. Edited by David Howarth and Jacob Torfing. New York: Palgrave Macmillan, pp. 297-315.
- Handy, C.B. 1993. *Understanding organizations*. USA: Oxford University Press.
- Haney, Lynne A. 2000. "Feminist state theory: applications to jurisprudence, criminology, and the welfare state." *Annual Review of Sociology*, 26: 641-66.
- Haralambos, M. and R. Heald. 1980. *Sociology: themes and perspectives*. London: University Tutorial Press.
- Harding, Sandra. 1986. *The science question in feminism*. Ithaca, USA and London, UK: Cornell University Press.
- Hayes, L.D. 1975. "The monarchy and modernisation in Nepal." *Asian Survey*, 15(7): 616-28.
- Heyzer, N. 2005. "Making the links: women's rights and empowerment are key to achieving the Millennium Development Goals." *Gender and Development*, 13(1):9-12.
- HMG. 1965. *Third Periodic Plan*. Kathmandu: National Planning Commission, His Majesty's Government of Nepal.
- HMG. 1993a. *The Civil Service Act 2049BS (1992AD) Amendment 2007*. Kathmandu: His Majesty's Government of Nepal.
- HMG. 1993b. *Civil Service Regulation 2050BS (1993AD) Amendment 2004*. Kathmandu: His Majesty's Government of Nepal.
- HMG. 2000. *Brief introduction of the Department of Water Supply and Sewerage*. Kathmandu: His Majesty's Government, Ministry of Physical Planning and Works, Department of Water Supply and Sewerage.
- HMG. 2001. *Report on the situation of women, children and households - between census household information, monitoring and evaluation system. BCHIMES*. Nepal: His Majesty's Government of Nepal, National Planning Commission Secretariat, Central Bureau of Statistics in collaboration with UNICEF.
- HMG. 2002a. *Water resources strategy Nepal*. Kathmandu: Water and Energy Commission Secretariat, His Majesty's Government of Nepal.

- HMG. 2002b. *Water resources strategy Nepal, Executive Summary*. Kathmandu: Water and Energy Commission Secretariat, His Majesty's Government of Nepal.
- HMG. 2004. *Brief introduction of the Department of Water Supply and Sewerage*. Kathmandu: His Majesty's Government, Ministry of Physical Planning and Works, Department of Water Supply and Sewerage.
- HMG. 2005a. *National Water Plan of 2005*. Kathmandu: Water and Energy Commission Secretariat, His Majesty's Government of Nepal.
- HMG. 2005b. *National Water Plan of 2005-Executive Summary*. Kathmandu: Water and Energy Commission Secretariat, His Majesty's Government of Nepal.
- Hunzai, Kiran. 2010. *The poverty status of female headed households in Nepal*. Sustainable Mountain Development No 57. Kathmandu: ICIMOD.
- Iannello, Kathleen P .1992. *Decisions without hierarchy: Feminist interventions in organization theory and practice*. New York: Routledge.
- IIDS. 2008. *Caste based discrimination in South Asia: a study on Nepal*. New Delhi: Indian Institute of Dalit Studies, India.
- IMC. 1989. *Turn over process of agency managed irrigation systems in Nepal*. IMC Applied Study Report no 11. Pokhara: His Majesty's Government, Nepal, Ministry of Water Resources, Department of Irrigation, Irrigation Management Centre.
- IRAM. 2008. *Nepal initiative on soaring food prices- Draft Report of Mission Findings and Recommendations*. Kathmandu: Government of Nepal, FAO, WFP, IFAD, Asian Development Bank, World Bank and Interagency Rapid Assessment Mission.
- ITECO 2003. *Detailed engineering design and construction supervision of Small Towns Water Supply and Sanitation Sector Project- Final Main Report Volume I* Kathmandu: Project management office, ITECO Nepal P Ltd, Nepal.
- Jackson, Cecile.1998. "Gender, irrigation, and environment: Arguing for agency." *Agriculture and Human Values*, 15(4): 313-24.
- Jamil, Ishtiaq and Rameshwor Dangal. 2009. "The state of bureaucratic representativeness and administrative culture in Nepal." *Contemporary South Asia*, 17(2): 193-211.
- Joshi, Bhuwan Lal and Leo E. Rose. 1966. *Democratic innovations in Nepal: a case study of political acculturation*. Berkeley: University of California Press.
- Kabeer, Naila. 2005. "Gender equality and women's empowerment: A critical analysis of the third Millennium Development Goal." *Gender and Development*, 13(1):13-24.
- Kabeer, Naila.1994. *Reversed realities: gender hierarchies in development thought*. London: Verso.

- Kanji, Nazneen. 2003. *Mind the gap: mainstreaming gender and participation in development*. Institutionalising participation series. London, UK: International Institute for Environment and Development and the Institute of Development Studies.
- Keane, David. 2007. *Caste-based discrimination in international human rights law*. England: Ashgate.
- Khadka, Manohara. 2009. "Why does exclusion continue? Aid, knowledge and power in Nepal's community forestry policy process". PhD Dissertation, Erasmus University, Rotterdam, The Netherlands.
- Khanal, Puspa Raj. 2003. *Engineering participation: the processes and outcomes of irrigation management transfer in the Terai of Nepal*. Hyderabad, India: Orient Longman.
- King, Elizabeth M and Andrew D. Mason .2001. "Engendering Development - Through gender equality in rights, resources and voice". *A World Bank Policy Research Report*, World Bank and Oxford University Press.
- Kohrt, B. A., D. J. Hruschka, C. M. Worthman, R. D. Kunz, J. L. Baldwin, N. Upadhaya, . . . M. K. Nepal 2012. "Political violence and mental health in Nepal: prospective study". *The British Journal of Psychiatry*, 201(4): 268-275.
- Lakhey, S. 1992. "Role of NGOs for the socio-economic development and poverty alleviation in Nepal " In: *Seminar on the role of NGOs in irrigation development and management in Nepal, 29-30 September 1992*. Edited by Ujjwal Pradhan, Alfredo Valera, and Sujata Rana .Jawalakhel, Kathmandu: IIMI and ADB/N, pp. 3-12.
- Lawoti, Mahendra. 2007. *Contentious politics and democratization in Nepal*, Thousand Oaks, Calif.: Sage.
- Lewis, David, Anthony J. Bebbington, Simon P. J. Batterbury, Alpa Shah, Elizabeth, Olson; M. Shameem Siddiqi and Sandra Duvall. 2003. "Practice, power and meaning: frameworks for studying organizational culture in multi-agency rural development projects." *Journal of International Development*, 15(5): 541-57.
- Lipsky, Michael. 1980. *Street-level bureaucracy: dilemmas of the individual in public services*. New York: Russell Sage Foundation.
- Long, Norman and Ann Long. 1992. *Battlefields of knowledge: the interlocking of theory and practice in social research and development*. London: Routledge.
- Long, Norman. 2001. *Development sociology: actor perspectives*. London, New York: Routledge.
- Longwe, Sara Hlupekile. 1997. "The evaporation of gender policies in the patriarchal cooking pot." *Development in Practice*, 7(2):148-56.
- Luintel, Youba Raj. 2004. "Agency, autonomy and the shared sexuality: gender relations in polyandry in Nepal Himalaya." *Contributions to Nepalese Studies*, 31(1): 43-83.

- Lynch, B.D. 1993. "The bureaucratic tradition and women's invisibility in irrigation", In *24th Chacmool Conference* Alberta: Archaeological Association, Calgary University, Canada, pp. 333-42.
- Macdonald, M., E. Sprenger, and, I. Dubel. 1997. *Gender and organizational change: bridging the gap between policy and practice*. Amsterdam: Royal Tropical Institute 154.
- Manor, James. 2004. "User committee: a potentially damaging second wave of decentralisation?" *The European Journal of Development Research*, 16(1):192-213.
- Martin, Edward. D. 1986. *Resource mobilization, water allocation, and farmer organization in hill irrigation systems in Nepal*. Ithaca: Cornell University.
- Martin, Edward. D. and Robert. Yoder. 1986. *Institutions for irrigation management in farmer-managed systems: examples from the Hills of Nepal*. IIMI research paper no. 5, Sri Lanka: IIMI.
- Martin, Patricia Yancey. 1990. "Rethinking feminist organizations", *Gender and Society*, 4(2), 182-206.
- Meinzen-Dick, R. and M. Zwarteveen. 1998. "Gendered participation in water management: Issues and illustrations from water users' associations in South Asia." *Agriculture and Human Values*, 15(4): 337-45.
- Miller, Carol and Sahara Razavi. 1998. *Missionaries and mandarins: feminist engagement with development institutions*. London: Intermediate Technology Publications.
- Mollinga, Peter P. 1998. "On the waterfront: water distribution, technology and agrarian change in a South Indian canal irrigation system". PhD Dissertation. Wageningen: Wageningen University.
- Mollinga, Peter P. and Jos Mooij. 1989. *Cracking the code: towards a conceptualization of the social content of technical artefacts*. Occasional paper no. 18, Technology Policy Group, Open University, Milton Keynes.
- Moser, Caroline and Annalise Moser. 2005. "Gender mainstreaming since Beijing: a review of success and limitations in international institutions." *Gender and Development*, 13(2):11-22.
- Moser, Caroline O.N. 1989. "Gender planning in the Third World: meeting practical and strategic gender needs." *World Development*, 17(11):1799-1825.
- Neupane, R S S. 1992. "Perception of bureaucracy on the role of NGOs in irrigation programs". In: Seminar on the *role of NGOs in irrigation development and management in Nepal*. 29-30 September 1992. Edited by Ujjawal Pradhan, Alfredo Valera, and Sujata Rana. Jawalkhel: IIMI Nepal and ADB/N, pp.:27-34.

- NPC.1992. *A legislative and institutional framework for environmental planning and design in Nepal*. Kathmandu: National Conservation Strategy Implementation Project, National Planning Commission, His Majesty's the Government, Nepal.
- NPC.1995. *Agriculture Perspective Plan 1995/96-2014/15*. Kathmandu: National Planning Commission, His Majesty's Government of Nepal.
- Ockelford, Jeremy and Vijaya Shrestha. 2002. *Institutional assessment of the rural water supply and sanitation sector in Nepal*. United Kingdom: ITAD.
- Ostrom, Elinor, Wai Fung Lam, and Myungsuk Lee. 1994. "The performance of self-governing irrigation systems in Nepal." *Human Systems Management*, 13(3): 197-207.
- Oxaal, Zoe and Sally Baden. 1997. *Gender and empowerment: definitions, approaches and implications for policy*. Bridge, UK: Institute of Development Studies.
- Pant, Dhruba. R. 2000. "Intervention processes and irrigation institutions: sustainability of farmer managed irrigation systems in Nepal" PhD Dissertation. Wageningen: Wageningen University.
- Pathak, Bishnu. 2005. *Politics of people's war and human rights in Nepal*. Kathmandu: BIPIMA Publications.
- Porter, Fenella, Ines Smyth, Caroline Sweetman.1999. *Gender works: Oxfam experience in policy and practice*, England: Oxfam GB publication.
- Poudel, Somnath. 2003. *Irrigation in Nepal - Water civilization and institutional development (Nepal ma Sichai Jaljanya Savyata Ra Sansthaagath Bikas)*. Kathmandu Nepal: Jalsrot Bikash Sanstha.
- Poudyal, Shiva Ranjan. 2009. *Dynamics of formal and informal institutions shaping the administrative culture*. Hague: International Institute of Social Studies.
- Pradhan, Prachanda. 1970. "Bureaucracy and development in Nepal" PhD Dissertation Claremont: Claremont Graduate School and University Centre.
- Pradhan, Prachanda.1989. *Patterns of irrigation organization in Nepal: a comparative study of 21 farmer-managed irrigation systems*, Colombo: International Irrigation Management Institute, Sri Lanka.
- Pradhan, Rajendra and Ava Shrestha. 2005. *Ethnic and caste diversity: Implications for development*: Kathmandu. Nepal Resident Mission, Asian Development Bank.
- Pradhan, Rajendra. 2000. "Law and changing rights to land and water in Nepal, 1854-1992." In: *Land and water rights in Nepal*. Edited by Franz von Benda-Beckman Rajendra Pradhan, Keebet von Benda-Beckman. Kathmandu and Rotterdam: FREEDEAL and WUR Wageningen, pp.39-70.
- Razavi, Sahara. 1997. "Fitting gender into development institutions." *World Development*, 25(7): 1111-1125.

- Regmi, Amreeta. 2004. *Democratising micro-hydel: structures, systems and agents in adaptive technology in the hills of Nepal*. Hyderabad: Orient Longman.
- Regmi, Shibesh Chandra. 2000. "Gender Issues in the management of water projects in Nepal." PhD Dissertation. United Kingdom: University of Southampton.
- Ribot, Jesse C. and Nancy Lee Peluso. 2003. "A theory of access." *Rural Sociology*, 68(2):153-181.
- RID. 2001. *Central Regional Irrigation Directorate: An introduction and progress report year 2000/2001*. Kathmandu: HMG/N, Ministry of Water Resources, Department of Irrigation.
- Rose, Leo. E. 1971. *Nepal: Strategy for survival*. California: University of California Press.
- Roy, Arundhati. 1999. *The greater common good*. Bombay: India Book Distributors Ltd.
- Sah, Nepali. 2008. "How useful are the demographic surveys in explaining the determinants of early marriage of girls in the Terai of Nepal?" *Journal of Population Research*, 25(2):207-222.
- Sapkota, B.N. 1997. "Building partnerships for reforms in the Nepalese Bureaucracy", *Asian Review of Public Administration*, VIX (1): 43-49.
- SATP. 2012. "Major Incidents of terrorist violence in Nepal since 1999". [www.satp.org/satporgtp/countries/nepal/database/majorincidents.htm] Accessed on 2.4.2012
- Schreiner, Barbara. 2001. "Integrating gender perspectives: Realising new options for improved water management", Keynote address at the Freshwater Conference- December 2001, Bonn.
- Schultz, S. K. and C. McShane. 1978. "To engineer the metropolis: sewers, sanitation, and city planning in late-nineteenth-century America." *The Journal of American History*, 65:389-411.
- Sen, Amartya K 1990. "Gender and cooperative conflicts". In *Persistent inequalities*. Edited by I. Tinker: Oxford, UK: Oxford University Press, pp. 123-49.
- Sen, Amartya K. 1995. *Inequality reexamined*. Oxford, UK: Oxford University Press.
- Sen, Amartya Kumar. 1999. *Development as freedom*. Oxford, UK: Oxford University Press.
- Shah, S. G., and Singh, G. N. 2001. *Irrigation development in Nepal: Investment, efficiency and institutions*, Research Report No 47: Nepal: Winrock International.
- Shahi, Pragati. 2010. "ADB funded irrigation project in limbo". *Kathmandu Post* dated 2010-04-09.
- Shakya, Anjana. 2006. *Social impact of armed conflict in Nepal*, Kathmandu: Social Inclusion Research Fund, SNV Nepal.

- Shakya, Rabindra K. 2009. "Why civil service reforms fail? A case of Nepal" *Administration and Management Review*, 21(2): 40-63.
- Sharma, Kripa. 2008. *A comparative study of inter caste marriage in rural and urban Nepal* Nepal. Kathmandu: Social Inclusion Research Fund, SNV Nepal.
- Sharma, Sudhindra. 2000. "Foreign aid and institutional plurality: The domestic water sector in Nepal." *International Journal of Water Resources Development*, 16:119-130.
- Sharma, Sudhindra.1992. "The pattern of development in Nepal: a new conceptual framework and a historical analysis." *Nepalese Studies*, 19(2): 261-281.
- Shore, Cris, and Susan Wright. 1997. *Anthropology of policy: critical perspectives on governance and power*. London; New York: Routledge.
- Shrestha, Arun B., Cameron P. Wake, Jack E. Dibb, and Paul A. Mayewski. 2000. "Precipitation fluctuations in the Nepal Himalaya and its vicinity and relationship with some large scale climatologically parameters." *International Journal of Climatology*, 20(3): 317-327.
- Shrestha, Gautam P., and Rammani Sharma. 2001. "Water Supply". In *HMG/N Report on the situation of women, children and households- between census household information, monitoring and evaluation system*. BCHIMES, Nepal : His Majesty's Government of Nepal, National Planning Commission Secretariat, Central Bureau of Statistics in collaboration with UNICEF, pp. 31- 44.
- Shrestha, Nanda. R.1997. *In the name of development: a reflection on Nepal*. Lanham, Md.: University Press of America.
- Shrestha, Nanda R. 2002. *Nepal and Bangladesh: a global studies handbook*. Global studies. Asia series; Santa Barbara, Calif: ABC-CLIO.
- Shrestha, Purusottam Man. 2007. "Corruption in infrastructure provision and service delivery at municipal level in Nepal: Case study", *Series Partnering to combat corruption*. Series Editor M. Sohail. UK: WEDC, Loughborough University.
- Shrestha, Vijaya L. and Dinesh C. Pyakural. 1996. "Community management and socialising engineers". In *Reaching the unreached: challenges for the 21st Century - 22nd WEDC Conference*. Edited by WEDC. New Delhi: WEDC, pp. 120-21.
- Shukla, Ashutosh and Khem Raj Sharma.1997. "Participatory Irrigation Management in Nepal: A monograph on evolution, processes and performance". Research Technology Division Branch, Irrigation Management Division, Department of Irrigation. Kathmandu: Printers Universe (P) Ltd.
- SILT.2001. *Semi Annual Progress Report No 10*. [1st Jan-15 July 2001] Nepal: Second Irrigation Sector Project, Project Implementation Unit, HMG, MOWR, DOI.

- Singh, Ravi Shekhar Narayan. 2010. *The unmaking of Nepal*. Frankfurt, United States: Lancer Publishers.
- Singh, Sonal, Sharan. P. Sharma, Edward Mills, Krishna. C. Poudel and Masamine Jimba. 2007. "Conflict induced internal displacement in Nepal." *Medicine, Conflict, and Survival*, 23(2):103-110.
- Sodemba, Indra. 2002. "A comparative study of legal complexities in farmer managed irrigation systems and agency managed irrigation systems in Nepal" In *XIIIth Congress on Folk Law and Legal Pluralism*. Changmai, Thailand.
- Sohail, M., and S. Cavill. 2006. *Accountability to prevent corruption in construction projects*. Loughborough: Department of Civil and Building Engineering, WEDC Institute, Loughborough University.
- Standing, Hilary. 2007. "Gender, myth and fable: the perils of mainstreaming in sector bureaucracy." In the *Feminisms contradictions, contestations and challenges in development*. Edited by A. Cornwall, E. Harrison and A. Whitehead. UK: Zed Books, pp. 101-11.
- Tamang, Seira. 2000. "Gender, state and citizenship in Nepal". PhD Dissertation, Washington DC: American University.
- Teltscher, K. 2006. *The high road to China, George Bogle, the Panchen Lama and the first British expedition to Tibet*. London: Bloomsbury Publishing Plc.
- Thapa, Deepak. 2003. *Understanding the Maoist Movement of Nepal*. Kathmandu: Martin Chautari.
- Thapa, Gagan. 2011. "Ihi sacred Newari Ritual" [<http://www.demotix.com/news/599397/ihisacred-newari-ritual-kathmandu>]. Accessed on 2.8.2011.
- THT. 2013. "Editorial: fiscal laxity". *The Himalayan Times*. Dated 8.8.2013. Kathmandu: International Media Network Pvt. Ltd.
- Timilsina, Uttam, Suman Sijapati, Janak Dahal, Babu Ram Adhikari, Sita Ram Karki, Gauri Lal Upadhaya. 2008. *Study report on human resource assessment of DOI: Water Management Branch*, Kathmandu: Department of Irrigation, Ministry of Water Resources, Government of Nepal.
- Tiwari, Narayani. 2007. "Women's agency in relation to population and environment in rural Nepal". PhD Dissertation. Wageningen: Wageningen University.
- Udas, Pranita B. 2002. "Gender, policy and water users' association: a case study of WUA in Nepal". MSc Dissertation, Wageningen: Wageningen University.
- Udas, Pranita B. 2006. "Quota systems and women's participation: lessons from water policy in Nepal". *New voices new perspectives series*. Dominican Republic: UN INSTRAW.

- Udas, Pranita B. 2011. "Situational analysis of women water professionals in Nepal". In: *Situational analysis of women professionals in South Asia*. Hyderabad: SaciWATERS, India, pp. 120-45.
- Udas, Pranita B. 2012. "Thinking about and acting on gender issues: interface of policy, culture and identity". In the *Diverting the flow, gender equity and water in South Asia*: Edited by M. Zwarteveen, S. Ahmed and S. Gautam. New Delhi: Zubaan publications, Pp. 546-73.
- Udas, Pranita B. 2013. "Rethinking gender inclusion and equity in irrigation policy: insights from Nepal". In: the *Water resources policies in South Asia*. Edited by A. Prakash, S. Singh and C. G. Goodrich, New Delhi: Routledge, pp. 75-94.
- Udas, Pranita B. and Margreet Zwarteveen. 2005. "Prescribing gender equity? The case of the Tukucha Nala Irrigation System, Central Nepal" In: *Liquid Relations- contested water rights and legal complexity*. Edited by Dik Roth, Rutgerd Boelens, and Margreet Zwarteveen. Piscataway: Rutgers University Press, Pp. 21-43.
- UNDP. 2004. *Nepal Human Development Report, 2004*. Washington DC: UNDP.
- UNDP. 2006. *Nepal: Readings in Human Development*. Kathmandu: United Nations Development Programme, Nepal.
- UNDP. 2009. *Nepal Human Development Report 2009: State transformation and human development*. Kathmandu: United Nations Development Program, Nepal.
- UNDP. 2013. *Human Development Report 2013- The rise of the South: Human progress in a diverse world*. Canada: United Nation Development Program, Gilmore Printing Services.
- UNESCO. 2010. *Engineering: Issues, challenges and opportunities*, France: UNESCO.
- Uphoff, N.T. 2004. "Irrigation associations and improved irrigation performance" In *Seminar on Linking Main System Management for Improved Irrigation Management*. Sri Lanka, 3-8 June 2002, Asian Productivity Organisation. pp:
- Upreti, Bishnu Raj. 2004. "Resource conflicts and conflict resolution in Nepal." *Mountain Research and Development*, 24(1): 60-66
- van Koppen, Barbara, Jacobijn van Etten, Prabina Bajracharya and Amita Tuladhar. 2001. *Women irrigators and leaders in the West Gandak Scheme Nepal*. IWMI Working Papers H028139. Sri Lanka: International Water Management Institute.
- van Koppen, Barbara.C.P.1998. "More jobs per drop: targeting irrigation to poor women and men", PhD Dissertation. Wageningen: Wageningen University.
- van Wijk-Sijbesma, Christine. 1987. "Drinking water and sanitation: women can do much". *World Health Forum*, 8: 28-33.

- van Wijk-Sijbesma, Christine. 1998. *Gender in water resources management, Water supply and sanitation - Roles and realities revisited*. The Hague: IRC International Water and Sanitation Centre, the Netherlands.
- van Wijk-Sijbesma, Christine. 1989. "What price water? User participation in paying for community based water supply with particular emphasis on piped systems". *Occasional paper series no 10*. The Hague: IRC International Water and Sanitation Centre, The Netherlands.
- Vincent, L. F. 1997. *Irrigation as a technology, irrigation as a resource: a socio-technical approach to irrigation*. Wageningen: Landbouwhogeschool Wageningen.
- von Benda-Beckmann, F., K. von Benda-Beckmann and H.L.J. Spiertz, 2000. "Gender and the multiple contingencies of water rights in Nepal." In: *Water, land and law: changing rights to land and water in Nepal*. Edited by Franz von Benda-Beckman Rajendra Pradhan, Keebet von Benda-Beckman. Kathmandu and Rotterdam: FREEDEAL and WUR Wageningen, Pp. 17-38.
- von Benda-Beckmann, K. M. Bruyn, H. van Dijk, G. Hasseling, B. van Koppen and L. Res. 1997. "Women and Development". Working paper no.2. The Netherlands: Netherlands Development Assistance Development Cooperation Information Department, Ministry of Foreign Affairs, The Netherlands.
- Walby, Sylvia. 2003. *Gender mainstreaming: productive tensions in theory and practice*. Leeds: University of Leeds.
- Watson, Joy. 1999. "So what does gender planning mean to policy makers?" *Agenda*: 32-37.
- WECS. 2011. *Water resources of Nepal in the context of climate change*, Kathmandu, Nepal: Water and Energy Commission Secretariat.
- Whelpton, J. 2005. *A history of Nepal*, Cambridge: Cambridge University Press.
- WHO. 2003. *Domestic Water Quantity, Service, Level and Health*. World Health Organisation. Geneva: WHO Press.
- WHO. 2011. *Guidelines for drinking-water quality*. Fourth edition. World Health Organisation. Geneva: WHO Press.
- Wieringa, Saskia. 1998. *Rethinking gender planning: a critical discussion of the use of the concept of gender*. The Hague: Institute of Social Studies.
- World Bank. 1976. *Village water supply*, A World Bank Paper, Washington DC: World Bank.
- World Bank. 2013. Gini Index: World Bank online database.
[<http://data.worldbank.org/indicator/SI.POV.GINI>] Accessed on 6.2.2013
- WPP. 2012. *Rural Water Supply, Design Manual, Vol. 1*. Manila: The World Bank Office.

- WWAP. 2009. The United Nations world water development report 3: Water in a changing world. World Water Assessment Programme, UNESCO, Paris and London: Earthscan
- Yoder, R. D. 1986. *The performance of farmer-managed irrigation systems in the hills of Nepal*. Cornell University Press.
- Zwarteveen, Margreet, and Meinzen-Dick, Ruth. 2001. "Gender and property rights in the commons: Examples of water rights in South Asia." *Agriculture and Human Values*, 18(1): 11-25.
- Zwarteveen, Margreet and Nita Neupane. 1996. *Free-riders or victims? Women's nonparticipation in irrigation management in Nepal's Chhattis Mauja Irrigation Scheme*. Colombo: IIMI.
- Zwarteveen, Margreet and Vivienne Bennett. 2005. "The connection between gender and water management" In *Opposing currents: the politics of water and gender in Latin America*. Edited by V. Bennett, S. Davila-Poblete and M. N. Rico. Pittsburgh, PA: University of Pittsburgh Press, pp. 13-29.
- Zwarteveen, Margreet, Udas, Pranita B., and Delgado, Juana. V. 2010. "Gendered dynamics of participation in water management in Nepal and Peru: revisiting the linkages between membership and power". In: *Social participation in water governance and management: critical and global perspectives*. Edited by K. A. Berry and E. Mollard, UK: Earthscan. pp. 69-92.
- Zwarteveen, Margreet. 1994. *Gender issues, water issues: a gender perspective to irrigation management*. Colombo: IIMI.
- Zwarteveen, Margreet. 1995. *Linking women to the main canal: gender and irrigation management*. London: IIED.
- Zwarteveen, Margreet. 2000. "Thinking about user based irrigation organizations from a feminist perspective: Access, Participatory Parity and Democracy" In *Villages in the future: crops, jobs and livelihoods*. Edited by D. Virchow and J. V. Braun: Berlin Heidelberg: Springer-Verlag, pp. 215-21.
- Zwarteveen, Margreet. 2006a. "Wedlock or deadlock? Feminists' attempts to engage irrigation engineers". PhD Dissertation. Wageningen: Wageningen University.
- Zwarteveen, Margreet. 2006b. "Effective gender mainstreaming in water management for sustainable livelihoods: from guidelines to practice." *Both ENDS Working Paper Series*,. Comprehensive Assessment of Water Management in Agriculture, Gender and Water Alliance and Both Ends, pp.1-29.
- Zwarteveen, Margreet. 2008. "Men, masculinities and water powers in irrigation". *Water Alternatives*, 1(1): 111-130.

Annexes

Annexe 1 Procedure for research area selection

1.1 First level of Selection

In August 2004 I concluded that the Eastern Development Region (EDR) should be selected for field research from among the five development regions. This is because ADB funded irrigation and drinking water projects are implemented only in this region. This allowed study of particular projects also - the Rural Water Supply and Sanitation projects in their third (1992-1997) and fourth (1997-2003) phases, and the Second Irrigation Sector Project. Irrigated systems implemented after promulgation of the Irrigation Policy 1992 and drinking water systems implemented after the Drinking Water Policy 1990 would be selected.

1.2 Second level of selection: selection of district in EDR

The data on projects implemented under ADB funded drinking water and irrigation is tabulated below. The reference for WUA selection was the Irrigation Policy 1992 and Drinking Water Policy 1990 that made provisions for minimum levels of women's participation in the users' committees.

The data available on irrigation projects included: command area; number of user households; cost; and implementation schedule (start and completion). The information about drinking water project included: cost; start and completion date; benefited population; coverage area. To select a district for detailed study I considered the number of projects implemented in recent consecutive years (after 1993), in order to indicate the performance of district level executing agencies and more opportunity to select among WUAs within the district. The differences between the numbers of irrigation projects and drinking water projects in a district were considered in order to provide an equal opportunity to select WUAs from both drinking water and irrigation projects.

▪ Procedure for data analysis

1. Tabulation of the number of project implemented based on the start date (Table 1). The data ranged from 1993 to 2002, covering the third and fourth phases of the Rural Water Supply and Sanitation project and the Second Irrigation Sector Project.

2. Summation of the district-wise total number of irrigation and drinking water projects. Coding: District with highest with 3, then 2 and 1, negligible with 0.

3. Identification of districts with continuous project implementation in recent years. Coding: districts with the highest number of consecutive years of project completion were coded as 3, 2 and 1 in descending order. This criterion indicated the performance of district implementing offices.

4. The differences between district-wise total number of irrigation and drinking water projects. Coding: District with lowest differences are coded with 3, 2 and 1 in ascending order. This criterion provides equal opportunity to select irrigation and drinking water projects within a district.

5. Summation of the above four codes. The district with highest marking would be selected for further study.

From this analysis, I concluded that within the EDR, three districts had potential for conducting this research. They were Morang, Dankuta and Udayapur districts. Finally Udayapur was selected.

Table 1. Selection of the district

Years 1993-2002	Irrigation Projects (1)		Drinking Water Projects (1)		Implemen- tation (3) #	Irrigation-Drinking Water Projects(4)		Total
	Total	*	Total	**		Difference	***	
Program								
District								
Taplejung	8	1	15	1	0	-7	1	3
Panchthar	10	2	15	1	1	-5	2	6
Ilam	9	2	16	2	1	-7	1	6
Jhapa	8	1	5	0	1	3	3	5
Morang	14	3	12	1	0	2	3	7
Sunsari	8	1	4	0	1	4	2	4
Dhankuta	9	2	17	2	3	-8	0	7
Terhathum	9	2	17	2	1	-8	0	5
Sankhuwasava	8	1	14	1	1	-6	1	4
Bhojpur	5	0	16	2	1	-11	0	3
Solukhumbu	5	0	13	1	2	-8	0	3
Okhaldhunga	5	0	27	3	1	-22	0	4
Khotang	9	2	17	2	1	-8	0	5
Udayapur	7	1	11	1	3	-4	2	7
Saptari	4	0	1	0	0	3	3	3
Siraha	3	0	2	0	0	1		0

Coding

*	**	***	# Project completion in recent consecutive year.
14-11= 3	22-27=3	2-3=3	5 consecutive years+ recent in 2001=3
9-10=2	16-21=2	4-5=2	five consecutive year =2
7-8=1	10-15=1	6-7=1	four consecutive year=1
rest=0	Rest=0	Rest=0	Rest=0

Three districts were identified to have potential for detailed study: Morang, Dankuta and Udaypur districts.

Annexe 2 Journey to Udayapur, 2004

My journey began at 5 am in a minibus together with 32 passengers of which only 4 were women. The bus travelled from Kathmandu to Ghaigat, district-headquarter of Udayapur, which took about 12 hours if there were no landslides or other problems in between. Usually a bus takes a route from Naubise- Mugling- Narayanghat (Chitwan district) and then Heutauda to follow the Mahendra-East-West highway. That day, in Chitwan district, vehicles were not allowed to travel and shops were closed due to a strike called by the Maoists. Thus from Naubise, our bus took a route to Tribhuwan Highway to avoid travelling via Chitwan. Narrow lanes and dangerous turning points were the reasons why buses will avoid this route. At 8 am the bus stopped for a tea break in Naubise before we headed to climb the hills of the Tribhuwan Highway. As the journey to twist and turn began in this route known as “*Byroadko Ghumti*¹”, many had nausea. The passengers were relaxed from the turns when the bus stopped for 15 minutes in an army-check post. Already we stopped twice at Naubise and in Palung checkpoints.

In Palung, an army officer questioned a passenger for carrying two pressure-cookers, as it was not allowed. There had been incidences of pressure cooker bomb explosions throughout the country; hence one needed permission from the local authority to carry cookers. The army asked the passenger to leave the cooker in the post and to return with a permission letter to collect it later. The man made a humble request clarifying that he was shifting from Kathmandu to his home place in Hetauda. He expressed the chances were that the next bus going to Kathmandu might go via Chitwan district on a different route and he might lose the chance to collect it. The officer expressed their difficulties. If they allowed travelling with the cooker, the passenger may well be captured at the next check post.

Two army officers discussed for a while and then decided to allow the passenger to travel with the cookers as the cooker was old and his luggage search showed no evidence that he was a Maoist. The army officer asked the bus attendant to explain to the next officer in the following check post to brief that the passenger was allowed on moral grounds.

During the whole trip, the bus stopped at eight checkpoints. The goods kept in the lower luggage compartment of the bus were not checked. However passengers travelling in the bus carrying bags were asked to get down with their bags and walked the 30-40 metres to the check post to verify what they carry. An official came inside the bus and checked the luggage rack inside. Until Hetauda, women who did not have bags were not asked to get down at the check points.

In Lahan we followed the Sagarmatha highway, a road connecting the Mahendra highway and Udaypur district. Before we reached Udaypur, the checking process slightly differed from the other check points. It was 6 pm. Our bus stopped 15 metres away from the check post. At this

¹ Ghumti refers to turnings in Nepali language

check post, only five passengers at a time were asked to visit the army officer to verify our handbags. Later I understood that the 'five person at a time' policy was because of a past experience when passengers standing in a line for the handbag check fired bullets after removing the gun from the bag, and killed an army officer.

The bus stopped at Ghighat at 6.30 pm. It was dark. The road was gravelled. I crossed three rivulets due to rain in the dark. Though I was walking in the municipality, there were no street lights. Walking in the dark here was no more different from walking in Sankuwasava district that was not yet connected to the nearest road head.

Annexe 3 Survey questionnaire

Date.....

Time of interview

Full name and caste of the users.....M/F

Address: VillageWN No.....

1. Family information

Female Members	Male Member	Age	Relation	Education	Occupation	Number of months stayed at home in a year

2. Information on irrigation

a. Total irrigated land

b. Total unirrigated land

c. Land out in tenancy

d. Land in tenancy

e. Land not cultivated.....

f. Source of irrigation

g. Period of irrigation ...from (month) to

h. Who had participated in irrigation related meetings in past from your family?
.....

i. Who is participating in the meetings at present?

j. other than meetings, who is involved in other irrigation work

Cleaning and maintenance.....

Labour contribution

Looking after water at farm.....

k. What is the role played by women in irrigation? What role they can play in the future?.....

3. Agriculture related

a. What was the cropping pattern last year

Irrigated land.....

Unirrigated land.....

b. What was the crop price last year?

Paddy.....

Maize.....

Any other.....

c. Livestock

4. Information on drinking water

a. Tap user/nonuser

b. Type of tap

a. community No of members b. private

c. How much you pay for using the water? NRs...../month

d. Before the tap, what was the source of drinking water?

.....

e. Which member of your family participated in meetings related to drinking water?

.....

f. Which member of your family contributed labour and participated in system maintenance activities?

5. About users' organization

a. Are you aware about the irrigation and drinking water committee members?

.....

b. Is there any difference if women user is or is not represented in the committee? If yes, why?.....

Annexe 4 Chapter outline of Periodic Plans 1-10 and First Three-Years Interim Plan

Chapter outline of periodic plan one to five (1956-1980)				
Plan 1	Plan 2	Plan 3	Plan 4	Plan 5
1.Introduction 2.Administration 3.Resources and allocation 4.Village development 5.Agriculture 6.Cadastral survey 7.Cooperative societies 8.Land reform policy 9. <u>Irrigation</u> 10.Forestry 11.Transportation 12.Communication 13.Power 14.Industry 15.Mineral and mining 16.Commerce and tourism 17.Rapti valley multipurpose project 18.Resettlement and government housing 19.Health 20.Education 21.Training 22.Survey research, statistics and publication	1.Introduction and objective 2.Financial management Summary of the plan 3.Land reform 4.Land survey 5.Agriculture loan 6.Administrative reform 7.Panchayat 8.Survey 9.Statistics 10.Training 11.Transport 12.Aviation 13.Communication 14.Electricity <u>15.Irrigation</u> 16.Agriculture 17.Resettlement 18.Forest 19.Industry 20.Tourism development 21.Education 22.Health <u>23.Drinking water</u> 24.Sports and entertainment	Part I General 1.Present economic conditions 2.Objectives and priorities 3.Investment allocation 4.Development policy 5.Financing plan Part II Development Programmes 7. Agriculture development 8. Land reform and administration 9. Agricultural credit and cooperative development 10. Food grains 11. Forestry and botany <u>12. Irrigation</u> 13. Panchayat 14. Industry 15.Cottage and small scale industries 16.The mineral industry 17.Tourism and archaeology 18.Foreign trade 19. Power 20. Transport 21.Communications 22.Education 23. Health <u>24. Drinking water and sewerage</u> 25.Housing programme 26.Publicity, broadcasting and cultural advancement	1.Objectives and priorities 2. Plan outlay and its allocation 3. Financial resources 4.Population and manpower 5. Agriculture 6.Agriculture credit, inputs, marketing <u>7.Irrigation</u> 8.Survey, land reform and land administration 9.Forest and medicinal plans department 10. Transport 11.Civil aviation 12.Tele-communication 13.Postal development 14.Nepal engineering institute 15.Industry 16.Cottage industry 17.Trade 18.Tourism 19.Geological survey and mining 20.Power 21.Hydrology and meteorology 22.Education 23.Health services <u>24. Drinking water and sanitation</u> 25. Panchayat	1. Fourth plan review 2. Objectives and policies 3. Regional development 4. Population policy 5. Employment 6. Land usage 7. Water resources 8. Expenditures 9. Financial resource management 10.Technical human resource management 11.Material management 12.Agriculture loan 13. Agriculture <u>14. Irrigation</u> 15. Land reform 16. Forest 17. Road and transport 18. Civil aviation 19.Tele communication 20.Postal 21.Industry 22.Cottage industry 23.Commerce 24.Tourism 25.Labor 26.Geological survey and mining 27.Electricity 28.Education 29.Health <u>30.Drinking water</u>

		27. Statistics 28. Hydrological survey 29. Administrative reform 30. Sports Part III Implementation 31. Improvement in organization and management 32. Decentralization Construction materials labour and transport.	26. Housing and physical planning 27. Publicity and broadcasting 28. Administrative reform 29. statistics	31. Panchayat 32. Housing and physical planning 33. Other communication 34. Administrative reform 35. Planning and statistic 36. Regional resources.
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Chapter outline of Periodic Plans Six to Eight (1980-1997)		
Plan 6	Plan 7	Plan 8
1. The review of the fifth plan 2. Main objective and strategies of the sixth plan 3. Economic growth rates & targets 4. Development programme & financial allocation in the public sector 5. Provision of construction materials and technical manpower 6. National level policies Employment policy Price policy Foreign trade policy Govt. owned corporation policy Regional development policy Power and energy policy Environment and land use policy Dev. administration policy <u>Policy relating to increasing mass participation in development</u> <u>Policy to promote women's participation in development works</u> Policy of integrated rural dev.	Part I 1. Assessment of the Sixth Plan Part II 2. Objectives and basic development strategies of seventh plan 3. Economic growth rate and target 4. Public sector development programmes and provisions of financial resources 5. Provision of construction material 6. Provision of technical manpower Part III National level policies 7. Population and employment policy 8. Water resources and fuel policy 9. Ecology and land use policy 10. Export policy 11. Development administration policy 12. Science and technology policy 13. Urbanization and habitation policy 14. Decentralization policy 15. Public enterprise policy	26. Land reform, cooperative and survey programme 28. Road transportation 30. Telecommunications 31. Postal service 32. Industry 33. Cottage industry 34. Trade 35. Tourism 36. Labour 37. Mining and geology 38. Power (Alternative energy, Water and energy development, Environment) 39. Education and culture 40. Information and publicity 41. Health 42. <u>Drinking water supply and sanitation</u> 43. Panchayat 44. Housing and Physical Planning 45. Administrative reform 46. Planning and statistic 47. Science and technology 48. Population 49. Social welfare 50. Programme for credit and banking development
		Part I- Past dev. efforts, achievement and constraints Part II- Conceptual framework, objectives and investment of the eighth plan Part III Sectoral Policies and Programmes 1. Agriculture forest and land reforms 2. <u>Irrigation</u> 3. Energy 4. Hydrology and meteorology 5. Road and other transport 6. Communications 7. Industry and mining 8. Trader 9. Tourism 10. Education and culture 11. Health and family planning 12. <u>Drinking water and sanitation (mentions women)</u> 13. Housing and urban development 14. Labor and social welfare 15. Local development 16. Supplies 17. Miscellaneous 18. Poverty alleviation 19. Population 20. Manpower and employment 21. Environment and resource conservation 22. Land utilization 23. Regional development

<p>7. Agriculture, irrigation, land reforms, forest and medicinal herbs Agriculture <u>Irrigation</u> Land reforms Forest and medicinal herbs</p> <p>8. Industry, commerce, mining and power</p> <p>9. Transport and communication</p> <p>10. Social services Education, Health <u>Drinking water and sewerage</u> Panchayat Housing and physical planning Administrative reform Statistics Science and technology Population</p>	<p>16. Policy for private sector</p> <p>17. Regional development policy</p> <p>18. Computer policy</p> <p>19. Price policy</p> <p>20. Tax policy</p> <p>21. Monetary and credit policy</p> <p><u>22. Policy on women's participation in development</u></p> <p>23. Policy for child development</p> <p>24. Agriculture Development</p> <p><u>25. Irrigation meteorology and hydrology</u></p>	<p>24. Decentralization</p> <p>25. Prices</p> <p>28. Financial resource mobilization</p> <p>29. Money banking and credit</p> <p>30. Capital market</p> <p>31. Public enterprises and privatization</p> <p>32. Development administration</p> <p>33. Science and technology</p> <p><u>34. Women in Development</u></p> <p>35. Child development</p> <p>36. Non-government organization</p> <p>37. Food and nutrition</p> <p>38. Monitoring and evaluation</p>
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Chapter outline of Periodic Plans Nine and Ten (1997-2007)		
Ninth Plan	Tenth Plan	
1. Review of the eighth plan	1. Background	19. Information communication
2. Concept, strategies & targets of development	2. Review of the ninth plan	20. Science and technology and alternative energy
3. Objective, policy & development thrust	3. Poverty analysis	21. Housing, building and urban development
4. Economic growth rate, investment & allocations	4. Objective, target and strategy of the tenth plan	22. Population, environment and natural disaster management
5. Macroeconomic policy	5. Economic growth rate, management and appropriation of resources and means	<i>Social sector</i>
6. Poverty alleviation and employment promotion	6. Macroeconomic sector	23. Education and sports
7. Population and human resources	7. Cross cutting sectoral policy (poverty alleviation and employment; human resource development; regional development and balance, productivity enhancement and management development; private sector development)	24. Health
8. Regional and local development	8. Development and social peace	25. <u>Drinking water and sanitation</u>
9. Environment and sustainable resource	<i>High sustainable and broad based economic growth</i>	26. <u>Women, children and social welfare sector</u>
10. Agriculture	9. Agriculture cooperatives	<i>Targeted programme and local development</i>
11. Industry, commerce and tourism	10. Forest and social conservation	27. Targeted programmes
12. Development of infrastructure (Electricity development And <u>Irrigation</u>)	11. Land reform and management	28. <u>Dalits and neglected communities</u>
13. Social service and social security	12. Agriculture and rural credit	29. <u>Indigenous people and ethnic groups</u>
Education	13. Culture, tourism and civil aviation	30. Local development
Culture	14. Industry, commerce and supplies	<i>Good governance</i>
Health	15. Labor and transport management	31. Good governance, development administration and human rights
Child development	16. Electricity development	32. Decentralization
Nutrition	17. <u>Irrigation and water induced disaster prevention</u>	33. Monitoring and evaluation
<u>Drinking water and sanitation</u>	18. Road transportation	34. Development of planning and statistics
Social security		
14. Women and youth development		
<u>Women and gender equality</u>		
Youth and sports		
15. Good governance & the management of development		

First Interim Plan (2007- 2010)	
<i>Status Review</i>	20. Health
1. Background	21. Population
2. Review of tenth plan	22. <u>Water supply and sanitation</u>
3. Existing challenges and opportunities for the development process	23. Children
4. Vision, goal and strategy of the interim plan	24. Youth
<i>Macroeconomic policy and sector plans</i>	25. Senior citizens
5. Macroeconomic policy	26. Natural disaster management
6. Social justice and inclusion	27. Local development
<i>Sector plans</i>	28. Non-government organizations
7. Peace, reconstruction, rehabilitation and reintegration	29. Human resource development
8. <u>Gender mainstreaming and inclusion</u>	<i>Infrastructure development</i>
<i>Economic Development</i>	30. Road transport
9. Agriculture	31. Electricity and power
10. Cooperative sector	32. <u>Irrigation</u>
11. Land reform and management	33. Information and communication
12. Forests and soil conservation	34. Housing and urban development
13. Culture, tourism and civil aviation	35. Environment, science and technology
14. Industry	<i>Good governance</i>
15. Commerce	36. Good governance
16. Supply management	37. Decentralization and devolution
17. Labour management and employment promotion	38. Planning and statistics system development
18. Transport management	39. Implementation, monitoring and evaluation
<i>Social development</i>	
19. Education and sports	

Annexe 5 Policy efforts to increase women’s participation in the irrigation sector

Irrigation Policy, 1992	It mentions that necessary emphasis shall be given to the provision and that there shall be at least 20 per cent female users in all the executive units of WUAs.
Irrigation Policy, (Amended) 1996	It says that necessary efforts have to be made to ensure 20 per cent of the total executive members of WUAs are women.
Irrigation Regulation, 2000	It legalised the policy objective. It mentions, ‘The users desirous to use any irrigation system developed and operated by His Majesty Government shall be required to constitute a users’ association having the executive committee of not exceeding nine members including at least two women members’
Irrigation Policy (Amended), 2003	It provides guidelines to consider 33 per cent of women’s participation with equal representation of backward caste group and minorities.
Irrigation Regulation, 2003	It directs that the WUAs should be of a maximum of eleven members, including 33 per cent of women, - two members from backward-caste groups when available.

Annexe 6 Policy efforts to increase women's participation in the drinking water sector

Policy document	Policy prescription
Community Gravity Flow Rural Water Supply System Management & Maintenances: Policy & Guidelines, 1993	The document says: 'Usually water users committee constitutes nine members (depending on the size of the system it could be three, five or seven) who are democratically elected. Of the nine members, two should be women.
Nepal National Sanitation Policy and Guidelines for Planning and Implementation of Sanitation Programme, 1994	Drinking water is considered as one of the components of hygiene & sanitation. Under the heading 'Plan of Action', the document has a paragraph on 'women's involvement, highlights the importance of women in development, mentions 'women will be encouraged to participate in decision-making bodies'.
National Water Supply Sector Policy and Regulation, 1998	The issue of gender equity is mentioned under the heading 'Regulation'. The guidelines mention six points: <ol style="list-style-type: none"> 1. During the feasibility study of the project, analysis of gender-related labour contribution and benefit will be made. 2. Consultation with local organizations representing women and women's rights will be taken care of during project design. 3. Discussion on importance of women participation in the project will be made among male and female users to enhance mutual understanding of the roles of men and women. 4. Training programmes for empower women. 5. Local organizations will be strengthened to work on gender equity. 6. Officers & volunteers implementing water programmes will be encouraged to undertake gender analysis during the implementation.
National Water Supply & Sanitation Policy, 2003, & Rural Water Supply & Sanitation National Action Plan, 2003	The document makes a provision for a minimum 30% participation of women in WUAs.
Rural Water Supply & Sanitation Sector Guidelines for Implementation of National Action Plan, 2003	The document makes a provision for equal representation of male and female users.
Rural Water Supply Policy 2004	Mentions, "participation of gender, caste and disadvantaged ethnic groups will be made essential to all decision making processes regarding water supply & sanitation services. Emphasis on meaningful participation."
Rural Water Supply and Sanitation Strategy 2004	Envisions proportional representation of gender, caste & disadvantaged ethnic groups, include at least 30% representation of women. The document provide guidelines on 'enhancing participation by gender, caste and disadvantaged group.

Annexe 7 Parameters of National Drinking Water Standards applicable for rural surface water drinking water systems

Category	Parameter	Unit	Maximum concentration limits	Remarks
Physical	Turbidity	NTU	5 (10)	
	pH		6.5-8.5	
	Color	TCU	5(15)	
	Taste & order		Non objectionable	
	Electrical conductivity	μS/cm	1500	
Chemical	Iron	mg/l	0.3(3)	
	Manganese		0.2t	
	Chromium		0.05	
	Fluoride		0.5-1.5*	
	Ammonia		1.5	
	Nitrate		50	
	Total Hardness		500	
	Calcium		200	
Microbiological	Residual Chlorine		0.1-0.2	In systems using chlorination
	E-coli	MPN/100ml	0	
	Total coliform	MPN/100ml	0 (95% sample)	

*This represents minimum and maximum concentration limits. () When there is no alternative, the values kept under parentheses will apply.

Annexe 8 Acronyms used in a meeting on participatory decision-making methods in the WATSAN sector in Nepal

PHST	Participatory hygiene and sanitation transformation
AAA	Assessment, analysis and action.
CHAST	Children, Health and Sanitation Trend
CFT	Child Friendly Tools
HACCP	Hazard analysis and critical control points
PHST	Participatory hygiene and sanitation transformation
CLTS	Community led total sanitation
SLTS	School led total sanitation
IPRA	Ignition participatory rural appraisal
CRC	Citizen report card
LBS	Looking back study
CBMS	Community based monitoring system
CWRM	Community water resources management
IWRM	Integrated water resources management
SARAR	Self-esteem, Associative Strengths, Resourcefulness, Action Planning and Responsibility
CM	Community mapping
PC	Pocket chart
FGD	Focus group discussion
MPA	Methodology for participatory assessment
PRA tool	Participatory rural appraisal tools
Others tools named in local language	
Sishno Pani	Nepalese term that refers to punish a culprit with nettle plant shocked in water

Summary

This thesis is about gendered policy processes in the irrigation and drinking water sectors in Nepal. Globally, increased women's participation in formal decision making bodies such as water users' associations is extensively advocated as a means to reduce existing gender gaps in water access, control and management and ultimately achieve gender equality. In Nepal, this has resulted in water policies since the 1990s that aim to increase female users' participation in water users' committees. This study explores the complexities of achieving gender equity in these water sectors through such policy measures.

The thesis examines the complexities in three major overlapping domains of policy processes: policy framing, policy implementation and policy outcomes. The main research question guiding the study is: How do gender discourses, organizational and professional cultures, and power relations structure the outcomes and processes of planned efforts to increase women's participation in irrigation and drinking water users' organizations? This question is framed on the theoretical grounding that effectiveness of policy measures to improve women users' participation in water management depends significantly on how gender issues are *perceived, framed, and addressed, in all domains. Research was undertaken through* case studies of three irrigation systems and two drinking water systems supplied by the Baruwa river in Udayapur district in the Eastern Development Region of Nepal, all under farmer management, and also through work in sector offices at district, regional and central level.

To answer the research question, this study first explores how different water policies have discursively constructed the links between gender and water use and management. It then investigates how policy measures have shaped or transformed gender differences in water management at system level, in terms of roles, rights, and responsibilities; and ultimately the individual's access to water. Finally, it examines how implementers at different levels have dealt with the task to address gender questions in their work.

Based on a review of periodic development plans and water sector policies of the Nepal government, Chapter 2 investigates the way these plans and policies discursively constructed the linkages between the gender equity agenda and water sector development efforts of the state. The chapter shows that the gender equity agenda of the government only indirectly linked with water sector development discourses. The government visualised increased users' participation as a primary means to address inequity, with emphasis on increasing women's participation. Yet, how women's participation in water programmes could help redress inequities was not made explicit. At least in the drinking water sector, it was linked to a role

for women in water management and system sustainability. However it remained vague in the irrigation sector. Here the emphasis on women users' participation in users' committees was perceived as an effort to achieve women's development rather than help water sector development. Based on policy approaches to promote participation, the sector-specific Water Resources Acts and Regulations visualised a water users' association (WUA) as the local entity to address issues around water allocation, distribution and conflict, with a monitoring role of the government. Issues of (gender) equity were thus implicitly delegated to local communities within the frame of a WUA, who were expected to arrange questions of equitable allocation and voice among themselves.

Chapter 3, 4 and 5 form Part 1 of the thesis around 'Access, Agency and Participation', which investigates policy outcomes for water access, with respect to increasing women users' participation in water users' committees. Chapter 3 introduces the Baruwa River Basin and the study area. Chapter 4 studies the three irrigation systems and Chapter 5 the two drinking water systems selected as case studies. Part I shows that attempts to improve women's participation in formal decision making domains of users organisations will by themselves not be enough to ensure users' access to water and redress gendered inequities in access to and control over water. One reason for this is that WUAs were found to be more interested in mobilising external resources for system improvement than internal issues of water equity in distribution. Besides, the functioning of a WUA depended on multiple layers of power relations among the users. The possibility to voice in WUA meetings was different for different users; hence the WUA meeting itself did not necessarily ensure all users' water rights. In addition, a WUA had differing levels of control in drinking water systems compared to irrigation. In drinking water systems, technical specificities of the infrastructure (both piped systems) made it relatively easy for the WUA to control water distribution: the taps of those who failed to pay could easily be closed. The open canal system in irrigation systems made water control more difficult and made acts of water theft easier, such as diverting water out of turn into one's field. While the WUAs did take more control of distribution and access in the drinking water systems, their actions were motivated to raise maintenance funds rather than ensuring that users' received the minimum water requirement for drinking.

At individual level, Part I showed that access to water was the result of multiple factors. Access to irrigation water was found to be a function of an individual or group's bargaining power to negotiate for water, with much of these negotiations happening at the farm level between irrigating neighbours. In the case of drinking water systems, the ability to pay was important in determining access to and control over piped water. In the absence of money, maintaining good relations with neighbours proved important to gain access in the case of private tube-wells, taps and irrigation. The non-paying households were poor and often landless families who could not meet the charges for drinking water, or were families with alternatives such as tube-wells installed. Users' participation in WUA meetings showed the importance to understand both the possibility to raise one's voice and the possibility that one's voice is heard. The few women users who were present in the meetings were there often

because of the opportunity cost of their participation for the family; as their wages as women were lower, it was less costly for the household if they participated instead of their husbands.

All the five systems discussed in Part I suffered from headwork damage and reconstruction problems due to floods in the source river, raising concerns on government investment as well as intervention modalities. Particularly at question was the appropriateness and resilience of standard river diversion works for drinking water and irrigation systems in the Siwalik Hills of Nepal, and in drinking water systems the common design of including a reservoir and treatment works.

Chapter 6, 7 and 8 are clustered as Part II on 'Doing Gender' which investigates policy implementation, and examines implementers' actions at different levels to take up the task to increase women's participation in WUAs. Part II analyses the formal space to think and talk about gender in the Departments of Irrigation (DOI) and Drinking Water Supply and Sewerage (DWSS) of the Nepal government, which are the executing agencies to achieve national targets on irrigation and drinking water. It also analysed officers' actions with respect to their professional identity, organisational culture and their individual attitude towards gender questions. Part II shows that the prevailing organisational priorities, funding modalities, staff composition and issues of organisational survival offer limited scope to staff to think and talk about gender. Lack of institutional rewards for implementing the policy clause on increasing women's participation in the WUA committee, and a strong tendency to delegate 'gender questions' (alongside other social questions) to less appreciated and under-budgeted management divisions and social scientists have resulted in less attention to implementation. At system level, officials belonging to the engineering service group, one of the professional subgroups of the Civil Service in Nepal that dominates staff composition of DOI and DWSS, face contradictions with their professional identity in addressing gender questions. Part II shows that what has been achieved so far has been the result of individual actions of particular officers, because of their personal convictions - regardless of whether they had an engineering or social science background. The study found that the way that officers perceived the policy agenda depends on their gender ideology and this determined their intention to work with it or not.

Chapter 9 consolidates the findings of the study, and reflects on the participatory policies in Nepal and their possibilities to address inequities around water access. It reviews to what extent policy measures have improved participation as well as whether participation in water users' organizations has improved access to water for women. This study found that neither the linkage between policy and participation nor that between participation and access is straightforward. Firstly, the organisational culture of the implementing organisation and the professional and personal identity of an officer have a large influence on shaping the translation of these policies during implementation. Whether and how information about the participation policy reaches women water users depends importantly on (male) leaders' attitudes vis à vis the policy clause on women's representation when they visit the

government office and get information about possible new projects and assistance. Ultimately, the actual materialisation of a woman's right to participate in a decision making forum depends on her agency to actually be present in the meeting, articulate her needs and bargain. Similarly, power dynamics among water users - that were only partly played out within formal decision making domains - are important in shaping women's actual access to water in the field beyond the WUA.

Thus action to improve participation of women in users' committees in terms of numbers alone has only indirect impacts on equitable access to water and uncertain outcomes in improved water delivery to women and other vulnerable users.

Samenvatting

Dit proefschrift gaat over de irrigatie- en drink -watersector in Nepal. Het onderzoekt hoe binnen dit beleid om wordt en werd gegaan met man-vrouw verhoudingen. Internationaal wordt het vergroten van de deelname van vrouwen in formele besluitvormingsorganen zoals watergebruikersorganisaties gezien als een goede manier om ongelijkheden tussen mannen en vrouwen in toegang tot en zeggenschap over water te verkleinen. De hoop is dat een betere vertegenwoordiging van vrouwen uiteindelijk zal leiden tot meer sociale gelijkheid tussen mannen en vrouwen. In Nepal heeft deze overtuiging vanaf 1990 geleid tot beleidsmaatregelen die tot doel hebben de deelname van vrouwen in watergebruikerscomités te vergroten. Deze studie onderzoekt hoe dergelijke maatregelen uitgevoerd zijn en welke resultaten ze hebben gehad.

Het proefschrift maakt onderscheid tussen drie overlappende beleidsdomeinen: beleidsformulering, beleidsuitvoering en uitkomsten van beleid. De centrale vraag van de studie is: Hoe worden beleidsresultaten en processen die tot doel hebben de deelname van vrouwen aan irrigatie en drinkwater gebruikersorganisaties te vergroten gevormd en beïnvloed door heersende man-vrouw vertogen, organisatorische en professionele culturen en machtsverhoudingen? Deze vraag stoelt theoretisch op de idee dat de effectiviteit van beleidsmaatregelen om de deelname van vrouwen aan watergebruikersorganisaties te vergroten in belangrijke mate afhangt van hoe man-vrouw vraagstukken beleefd, uitgedrukt en ervaren worden, en van hoe ermee wordt omgegaan in alle domeinen.

Het onderzoek behelsde casestudies van drie irrigatiesystemen en twee drinkwatersystemen die alle van water voorzien worden door de Baruwa rivier in het district Udayapur in de Eastern Development Region van Nepal. Alle onderzochte watersystemen werden beheerd door de gebruikers zelf. Naast onderzoek op het niveau van de gebruikers, ging de studie ook over de opvattingen en handelingspraktijken van de beleidsuitvoerders, door systematische interviews en observaties in de verschillende kantoren op district, regionaal en nationaal niveau.

De hoofdvraag werd opgedeeld in drie onderzoeklijnen. Een eerste onderzoeklijn verkende hoe, door de geschiedenis heen, waterbeleid de relaties tussen watergebruik of beheer en man-vrouw verhoudingen heeft geconcipieerd. Een tweede onderzoeklijk keek vervolgens naar hoe beleidsmaatregelen man-vrouw verschillen in water gebruik – in termen van rollen, rechten, verantwoordelijken en uiteindelijk toegang tot water - en beheer mede-bepaalden of transformeerden. Een derde onderzoeklijn, tenslotte, onderzocht hoe

uitvoerders op verschillende beleidsniveaus om zijn gegaan met de opdracht om in hun werk ook met man-vrouw vraagstukken om te gaan.

Een systematische vergelijking van de periodieke ontwikkelingsplannen en het water sector beleid van de Nepalese overheid door de jaren heen in hoofdstuk 2 vormde de basis voor een analyse van hoe de verschillende plannen en beleidsstukken de relatie tussen gendergelijkheid en water ontwikkeling zien. Het hoofdstuk laat zien dat er weinig dwarsverbanden waren tussen de vrouwen emancipatie agenda van de overheid en haar waterbeleid. Het vergroten van de deelname van gebruikers werd door de overheid gezien als de belangrijkste manier om ongelijkheid te bestrijden, waarbij extra nadruk werd gegeven aan deelname van vrouwelijke gebruikers. Hoe een vergrote deelname zou moeten leiden tot minder ongelijkheid werd echter niet expliciet gemaakt. In de drinkwatersector werd het belang van participatie van vrouwen uitgelegd door te wijzen op de belangrijke rol van vrouwen in de huishoudelijke watervoorziening; meer vrouwen zou dan de effectiviteit van projecten en programma's vergroten. In de irrigatiesector was het minder duidelijk waarom meer of betere participatie van vrouwen wenselijk zou zijn. In deze sector werden maatregelen ter vergroting van de deelname van vrouwen aan de besluitvorming gezien daarom beschouwd als onderdeel van een emancipatie agenda, en niet als onderdeel van een irrigatie-agenda.

Beleidsmaatregelen om de participatie van gebruikers in water besluitvorming te vergroten, zoals de sectorspecifieke 'Water Resources Act and Regulation', stelden dat een watergebruikersorganisatie de lokale entiteit was die die verantwoordelijkheid moest dragen voor (de organisatie van) water verdeling en het oplossen van conflicten. De overheid had slechts een toezichthoudende rol. Hierdoor werd de verantwoordelijkheid voor gendergerelateerde kwesties ook impliciet gedelegeerd naar lokale gemeenschappen; het regelen van gelijkheid tussen mannen en vrouwen in termen van toegang tot en zeggenschap over water moest op dit niveau geregeld worden.

De hoofdstukken 3, 4 en 5 vormen samen deel 1 van het proefschrift, en gaan over: 'Toegang, handelingsvrijheid en participatie'. Dit deel van het proefschrift doet verslag van het onderzoek naar de resultaten van water beleid, specifiek kijkend naar maatregelen om de deelname van vrouwen in gebruikersorganisaties te vergroten. Hoofdstuk 3 geeft een introductie tot de Baruwa rivier en het onderzoeksgebied; hoofdstuk 4 geeft de uitkomsten van het onderzoek naar de 3 irrigatiesystemen; en hoofdstuk 5 doet verslag van de 2 drinkwatersystemen. Dit deel van het proefschrift laat zien dat het vergroten van de deelname van vrouwen aan formele besluitvormingsorganen op zichzelf niet genoeg is om ook hun toegang tot water te verbeteren, of om ongelijkheden tussen mannen en vrouwen in toegang tot en zeggenschap over water te helpen opheffen. Eén reden hiervoor was dat watergebruikersorganisaties meer bezig waren met het mobiliseren van externe fondsen om hun systemen te versterken of uit te breiden dan met het beheren van bestaande water systemen. Daarnaast was het functioneren van watergebruikersorganisaties intrinsiek

verweven met lokale machtsverhoudingen tussen gebruikers. Er bestonden grote verschillen tussen gebruikers wat betreft hun vermogen om invloed te hebben in vergaderingen van de watergebruikersorganisatie, waardoor deze organisatie maar voor sommigen een effectieve garantie voor toegang tot water bood.

Mogelijkheden voor zeggenschap en controle verschilden bovendien tussen irrigatiesystemen en drinkwatersystemen, een verschil dat gerelateerd was aan technische verschillen. De technische infrastructuur van drinkwatersystemen, die bestond uit gesloten leidingen en kranen, maakte het relatief eenvoudig voor de watergebruikersorganisatie om diegenen die niet voor hun water betaalden af te sluiten. Dit was een stuk moeilijker in de bestudeerde irrigatiesystemen, die werden gekenmerkt door een open kanaal infrastructuur. Diefstal van water was daarom makkelijker en kwam vaker voor in irrigatiesystemen; gebruikers konden water naar hun veld laten stromen ook als ze daar niet het recht toe hadden. Drinkwatergebruikersorganisaties waren beter in staat de water verdeling volgens afspraak te regelen. Echter, de noodzaak om in het eigen onderhoud te voorzien was daarbij vaak doorslaggevend dan de wens om alle gebruikers naar tevredenheid te bedienen, of de zorg om allen van drinkwater te voorzien.

Gezien vanuit de gebruiker laat deel 1 zien dat toegang tot water het resultaat was van een samenspel van factoren. Toegang tot irrigatiewater was de uitkomst van de onderhandelingsmacht van een individu of groep, waarbij veel van de onderhandelingen over water plaatsvonden in het veld tussen irrigerende burens. Voor drinkwater was iemands vermogen om te betalen bepalend voor iemands toegang tot en zeggenschap over water. Bij gebrek aan geld bleek een goede verstandhouding met burens belangrijk om toegang tot water te krijgen. De niet-betalende huishoudens waren voornamelijk de armere en landloze families die moeite hadden het geld voor drinkwater bij elkaar te sprokkelen. Sommige niet-betalers waren ook huishoudens die alternatieve waterbronnen hadden, zoals een eigen put.

Observaties tijdens watergebruikersvergaderingen lieten zien dat iemands invloed zowel afhing van diens vermogen iets te zeggen, als van de mate waarin naar die stem geluisterd werd. De weinige vrouwelijke gebruikers die deelnamen aan vergaderingen deden dit vaak omdat deelname verplicht was voor minstens één lid van het huishouden, en omdat het relatief goedkoper was voor hen om te gaan dan voor hun man. Omdat het loon van vrouwen lager is, kost het huishoudens minder als zij naar de vergadering gaan in plaats van hun man.

Alle vijf in Deel 1 onderzochte systemen hadden te lijden van schade aan de hoofdinlaat door de veel voorkomende overstromingen van de rivier. Dit roept vragen op over de effectiviteit van overheidsinvesteringen, en over gemaakte technologische ontwerpkeuzes.

De hoofdstukken 6, 7 en 8 vormen samen deel II van het proefschrift, getiteld 'Gender doen'. Dit deel onderzoekt hoe genderspecifieke maatregelen van waterbeleid werden uitgevoerd door te kijken naar uitvoeringspraktijken op verschillende beleidsniveaus. Hoe gingen uitvoerders om met de opdracht ervoor te zorgen dat meer vrouwen deelnamen aan

watergebruikersorganisaties? Dit deel kijkt, in andere woorden, naar de formele ruimte die uitvoerders in het Irrigatiedepartement en het Drinkwaterdepartement van de Nepalese overheid hadden om over man-vrouw verhoudingen na te denken en te handelen. Deze twee departementen zijn de overheidsinstanties die verantwoordelijke waren voor het uitvoeren van de beleidsplannen, en het behalen van de gestelde doelen. Dit deel van het proefschrift beschouwt de handelingen van uitvoerders als voortvloeiend uit hun professionele identiteit, de organisatiecultuur en hun individuele houding ten opzichte van gender-vraagstukken.

Deel II laat zien dat heersende organisatorische prioriteiten, manieren van financiering, de samenstelling van de staf en de noodzaak voor organisatorisch zelfbehoud er samen voor zorgden dat de ruimte die beleidsmedewerkers en uitvoerders hadden om aandacht te schenken aan man-vrouw verhoudingen binnen hun werk gering was. In het algemeen was er weinig institutionele waardering voor het goed uitvoeren van de gender-beleidsclausule: het succesvol vergroten van de deelname van vrouwen in watergebruikersorganisaties leverde weinig tot geen waardering op onder collega's of superieuren. Er was, binnen de twee departementen, een sterke neiging om 'man-vrouw kwesties', samen met andere sociale vraagstukken, te delegeren naar de minder gewaardeerde en onderbetaalde afdelingen of naar laag in de hiërarchie staande sociale wetenschappers. Dit leidde tot weinig prioriteit voor het uitvoeren van deze beleidsmaatregelen.

Net als op de andere niveaus, waren op het niveau van water systemen de meeste uitvoerders ingenieurs. Veel van hen ervoeren een tegenstelling tussen hun professionele identiteit en de opdracht zich bezig te houden met man-vrouw verhoudingen. Deel II laat zien dat veel van datgene wat tot nu toe bereikt is op het gebied van het vergroten van de deelname van vrouwen aan gebruikersorganisaties het gevolg is geweest van de particuliere acties van sommige uitvoerders, te danken aan hun persoonlijke opvattingen. Of uitvoerders zich inzetten voor gender-doelstellingen bleek niet direct terug te voeren op of ze ingenieur dan wel sociale wetenschapper waren. De manier waarop uitvoerders de beleidsagenda interpreterden hing in belangrijke mate af van hun eigen gender-opvattingen, die hun voornemen om er iets aan te doen of niet bepaalde.

Hoofdstuk 9 vat de belangrijkste bevindingen van de studie samen, en geeft een beschouwing over de effectiviteit van beleid gericht op het vergroten van de gebruikersparticipatie in water projecten in Nepal: welke mogelijkheden biedt dit beleid om ongelijkheden in toegang tot water te verkleinen? Deze vraag behelst zowel de vraag naar de mate waarin beleidsmaatregelen geleid hebben tot meer participatie, als de vraag naar of meer participatie heeft geleid tot verbeterde toegang tot water voor vrouwen. De uitkomst van deze studie is dat noch de relatie tussen beleid en uitvoering, noch de relatie tussen participatie en toegang tot water eenduidig is. Ten eerste, de organisatiecultuur van de uitvoerende organisatie, samen met de professionele en persoonlijke identiteiten van uitvoerders, bepalen in grote mate hoe beleidsmaatregelen uitgevoerd worden. Ten tweede, of en hoe informatie over het participatiebeleid vrouwelijke watergebruikers bereikt hangt

in belangrijke mate af van de houding van (mannelijke) leiders ten opzichte van het beleid zoals zij dat te horen krijgen bij hun bezoeken aan overheidskantoren of wanneer ze met overheidsambtenaren onderhandelen over mogelijke steun aan projecten. In laatste instantie hangt het succes van het beleid af van het individuele vermogen van vrouwelijke watergebruikers om daadwerkelijk naar vergaderingen te gaan en daar invloed te hebben. Daarbij moet ook in ogenschouw genomen worden dat watergebruik- en verdelingspraktijken vaak intrinsiek onderdeel zijn van, en verweven met, wijdere machtsverhoudingen tussen gebruikers. Deze worden slechts ten dele uitgespeeld in de formele sfeer van de watergebruikersorganisatie. Dit betekent dat om de toegang van vrouwen tot en hun zeggenschap over water te vergroten, beleidsmaatregelen gericht op het vergroten van hun deelname aan formele besluitvormingsstructuren niet voldoende zijn.

Curriculum Vitae

Graduated as a Bachelor of Agriculture from Institute of Agriculture and Animal Science, Tribhuvan University, Nepal in 1998, Pranita Bhushan Udas began her career working in the high mountain region of Nepal. She worked first with Eco-Himal, the Society for Cooperation Alps Himalaya in the Arun Valley Region in Northern Nepal. Later she worked with WATCH - Women Acting together for Change - in Kathmandu, during which she became involved in facilitating the process of federating irrigation water users' associations in Nepal (1999-2000). This process led to the organisation that became known as the National Federation of Irrigation Water Users' Associations Nepal (NFIWUAN). She pursued her master level study at Wageningen University in the Netherlands 2000-2002, gaining an MSc in Soil and Water, specialisation Irrigation. Her work experience since graduation has extended to organisations in Nepal, India and the Netherlands. She has worked with the Gujarat Institute of Development Research (GIDR), the GLOCAL consultancy group, SasiWaters and SOPPECOM in India, the Nepal Engineering College in Nepal and the Gender and Water Alliance (GWA) in the Netherlands.

Using her knowledge on interdisciplinary water resources management with these partners, she has contributed as a GWA facilitator for the Water for Asian Cities Program, UN-Habitat. She has also conducted research on: Participatory Irrigation Management for the GIDR; on the Gender Water Equity Gauge for SOPPECOM; and on Multistakeholder Processes in Drinking Water Programs in Nepal for the Disaster Management Group, Wageningen University. She remains a visiting faculty member at the Nepal Engineering College to teach the course on Gender and Water for the Master degree in Interdisciplinary Water Resources Management. She was a cofounder of Nepal School of Social Work, Nepal.

She won a WOTRO Science for Global Development grant (from NWO, the Netherlands Organisation for Scientific Research) for her PhD research at Wageningen University, published in this thesis. After submission of her dissertation, she was involved in preparing Gender Equality and Social Inclusion policy guidelines of Ministry of Irrigation in Nepal. In future, she aimed to continue her work on issues around water equity and justice.

List of PhD related publications

Udas, P. B., Roth, D., & Zwartveen, M. (2014). Informal privatisation of community taps: issues of access and equity. *Local Environment*, 1-18.

Udas, P. B. (2013). Rethinking gender inclusion and equity in irrigation policy: insights from Nepal. In, A. Prakash, C. G. Goodrich & S. Singh (Eds), *Water resources policies in South Asia*: New Delhi, India: Routledge:

Udas, P. B. (2012). Thinking about and acting on gender issues: interface of policy, culture and identity. In, M. Zwartveen, S. Ahmed & S. Gautam (Eds), *Diverting the flow, gender equity and water in South Asia*: India: Zubaan Publications.

Udas, P. B. (2011). Situational Analysis of Women Water Professionals in Nepal. In, SaciWATERs (Ed.), *Situational Analysis of Women Professionals in South Asia*. Hyderabad, India: SaciWATERs. <http://www.saciwaters.org/CB/resources/situational%20analysis.pdf>

Udas, P.B (2010). Who can be a WUA Leader? Leadership criteria in the contemporary FMIS. In, P. Pradhan, U. Gautam & N.M. Joshi (Eds), *Dynamics of Farmer Managed Irrigation Systems: socio-institutional, economic and technical contexts*. Kathmandu, Nepal: FMIS PromotionTrust/Shree Press.

Udas, P. B., & Zwartveen, M. (2010). Can water professionals meet gender goals? A case study of the department of irrigation in Nepal. *Gender and Development* 18(1): 87-97.

Zwartveen, M., **Udas, P. B.,** & Delgado, J. V. (2010). Gendered dynamics of participation in water management in Nepal and Peru: revisiting the linkages between membership and power. In K. A. Berry & E. Mollard (Eds) *Social participation in water governance and management: critical and global perspectives*. London, UK: Earthscan.

Udas, P. B. (2006). Quota systems and women's participation: lessons from water policy in Nepal: New voices new perspectives. UN INSTRAW.
<http://lib.icimod.org/record/12597/files/3772.pdf>

WASS Training and Supervision Plan



Wageningen School
of Social Sciences

Pranita Bhushan Udas (Nikku)
Completed Training and Supervision Plan
Wageningen School of Social Sciences (WASS)

Name of the learning activity	Department/Institute	Year	ECTS (1=28hrs)
A) Project related competences			
Research Proposal and TSP writing	IWE-WUR	2004	6
Orientation Course	CERES, Utrecht University	2004	4.3
Presentation tutorial	CERES, Utrecht University	2004	5.7
General Introductory Course in Women's Studies (2003-2004)	NOV (Netherlands Research School of Women's Studies)	2004	6
Poster presentation 'Gendered Participation in Water Management in Nepal'	WASS	2009	1
B) General research related competences			
A practical course on the methodology of field work	CERES, Utrecht University/ Nijmegen University	2004	2
Presentation scientific papers and public meetings			
'Negotiation or neglect? Interface of positive discriminatory policy and professional ideologies'	SIWI- Stockholm World Water Week	2005	1
'Social construction and changing role of women in water management: an experiences from Udayapur'	Public talk Martin Chautari, Nepal	2005	1
'Rethinking gender inclusion and equity in Irrigation Policy: insights from Nepal'	International Conference on Water Resources Policy in South Asia, SaciWaters, Hyderabad, India	2008	1
'Who can be a WUA leader? Leadership criteria in the contemporary FMIS'	5 th International Seminar Farmer Managed Irrigation Systems Trust (FMIST), Kathmandu, Nepal	2010	1
'Revisiting participatory irrigation policy and practice: insights from Nepal'	International Conference Kathmandu, Tribhuvan University/Bergen University	2011	1
'Situational analysis of women water professionals in Nepal'	International conference SOPPECOM Pune, India	2011	1
'Quota systems and women's participation: lessons from water policy in Nepal New voices New perspectives'	UN INSTRAW	2006	1
C) Career related competences/personal development			
In the book 'Water for Food, Water for Life', reviewer of chapter 'Reinventing Irrigation' for a gender perspective	IWMI	2005	1
Contribution in curriculum development Bachelor Social Work/Masters Social Work	Nepal School of Social Work Purbanchal University, Nepal	2005	1
Visiting Fellow, Master course on IWRM, Nepal Engineering College, Nepal	Nepal Engineering College (NEC) Kathmandu, Nepal	2008-2012	6
Contribution on irrigation chapter of GESI (Gender, Equity and Social Inclusion)	World Bank/DFID	2010	1
(Co)supervision 3 MSc theses	WUR-IWE/NEC	2009/10	1
Total			42

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Front cover

Women in Baruwa River Basin, Udayapur, 2005 (taken by Margreet Zwarteveen)

Back cover

Top background: Central office, Department of Irrigation (DOI), Nepal

Top central: The DOI building, with its organisational motto “Let’s irrigate, increase production”

Bottom background: Central office, Department of Water Supply and Sewerage (DWSS), Nepal

Bottom central: The statue of a woman in a *sari* pouring water from a water pot (*gagri*) that stands outside the DWSS building

