Gender Issues and Women Participation in Water Users Associations (WUAs) in Irrigated Agriculture in Nepal

Prachanda Pradhan[1]

[1] Patron of the Farmer Managed Irrigation Systems Trust (FMIST), Nepal.

> "We know that women are almost always heavily involved in the agriculture activities associated with irrigation. Yet we do not see much direct women's participation in managing water, structures and processes whereby agriculture is made more productive through irrigation" (N. Uphoff. 1986. *Improving International Irrigation Management with Farmer Participation: Getting the Process Right).*

Introduction

The socio-economic scenario of rural Nepal is fast changing because young and able people are migrating out of rural areas. The most recent national census reports that one in 10 inhabitants have out-migrated in search of opportunities that pastoral Nepal cannot offer,[2] adding agriculture and other rural activities to the burden faced by women and the elderly who are left behind.

Along with women's role-change in agriculture, it is now equally important to explore issues in bringing women into the mainstream of the Water Users' Association (WUA) to better perform in the context of rural Nepal's changing demographic landscapes. Since irrigation water is an essential input in farming, the women now handling agricultural

---

[2] National Population and Housing Census 2011, (National Report), Volume 01, NPHC 2011 (accessed May 2016), http://unstats.un.org/unsd/demographic/sources/census/wphc/Nepal/Nepal-Census-2011-Vol1.pdf. See also 'Labour Migration for Employment - A Status Report for Nepal: 2013/2014', issued by the Ministry of Labour and Employment of the Government of Nepal (https://asiafoundation.org/resources/pdfs/MigrationReportbyGovernmentofNepal.pdf).

activities ought to take a more decisive role in the management of this resource.

A country's overall development is reflected by the overall socio-economic advancement and the status enjoyed by its women. The high correlation between gender equality and human development is established and the socially-inclusive societies are, by and large, more stable and prosperous. This assumption is substantiated by a recent report published by the World Economic Forum (Global Gender Gap Report, 2013).

More efforts are still needed to raise women's status in Nepal. One trend that is bearing dramatic effect, both positive and negative, is the added domestic and agricultural responsibilities being shouldered by contemporary Nepali females, due to increased out-migration of their working-age male counterparts. This demographic shift has created both opportunities and challenges for the women left behind.

In the Nepalese context, the management of irrigation water has been primarily a male domain. However, in the changing scenario of rural Nepal, women are now decision-makers in this important area of farming. The close relation between water scarcity, or non-availability of water, and intensity of poverty is well documented. Depriving women, as decision makers, would accelerate the incidence of poverty in the out-migrated families, especially in marginal farm families.[3] It is important to see how women can take up the responsibility of decision-making in irrigation management.

---

[3] A marginal farmer cultivates land to a subsistence level of income.

Nepali women have historically played an important, and often unrecognized, role in agriculture, which sustains nearly 80% of the country's population. With increasing numbers of men working abroad, however, women have stepped into more aggressive leadership roles than has been the case in the past.

Women are now assuming responsibility for jobs previously handled by their menfolk, such as plowing, a task that women should not handle due to a taboo rooted in rural areas. Moreover, funerary rituals in rural areas are the preserve of men but demographic changes mean that women are now taking charge of these ceremonies. At the household front, rituals regarding the death of one's father or mother used to be performed by the son or by other male members of the family. Now, however, this situation is changing and change is being introduced into the fabric of Nepalese society.

Methodology

I have conducted a literature review on WUA, on female participation in WUA and on the impact of out-migration on agriculture. The study is based on a qualitative inquiry focusing on families headed by a female and with one family member out-migrated, corroborated by focus group discussions (FGD) and key informant interviews with WUA officials and Department of Irrigation (DOI) officials at headquarter and district level. A total of 259 male and female members were interviewed. Districts and systems visited are listed in Annex 1.

What is WUA?

WUA is a farmers' forum for decisions related to the utilization and distribution of water resources to legitimate members of the association. In this regard, it functions like a consortium or a co-operative. WUAs can be categorized into two types; 1) as a farmer-managed system based on community consensus and acting through social-control mechanisms; 2) as a government initiative under the direction and regulation of the state.

WUAs consist of a general assembly of all beneficiary members of the irrigation systems, with an Executive Committee of representatives from General Assembly (Lam, 1966: 59).

WUA Registration

The need for WUA registration became necessary for its legal status in the mid-1980s, when the Basic Need Fulfillment Program (BNP) was introduced by the government of Nepal. In order to provide support to meet food requirements, the World Bank and the Asian Development Bank (ADB) proposed the sectoral approach[4] in favor of the project approach. The World Bank supported an Irrigation Line of Credit (ILC) project, which proposed that they would like to see the provision for the establishment and legal recognition of WUAs. The government of Nepal proposed that WUAs can be registered under the Association Act of Nepal, 1978, at District Administration level. The Association Act of

[4] The sectoral approach is adopted for a particular area of the economy or society.

Nepal, 1978, was enacted for the purpose of controlling organizational activities during the Panchayat period.[5] There are numerous stringent provisions which are either irrelevant to WUAs or difficult for the WUAs to adhere to. It was agreed by the ILC project that WUAs will be registered under the Association Act of Nepal, 1978 for the purpose of receiving assistance from the government. Similar provisions were also followed by ADB-funded Sector Irrigation Projects. Despite the provision of registration, thousands of irrigation systems were not registered and consequently they failed to qualify for government assistance.[6] At present, in the region of 2,500 FMIS (farmer-managed irrigation systems) have received assistance.

The Water Resources Act, 1992, was enacted and included provisions recognizing the existence of WUAs. The regulation of the 1992 Water Resources Act allowed for the WUAs to be registered in the District Water Resources Development Committee under the Chairmanship of the Chief District Office and managed by the Local Development Office, since the secretary and other members are water-related agencies at the district. The committee-registered WUA obtains a guarantee of water right and is able to settle disputes inherent to water rights.

---

[5] The political system in effect in Nepal during the 30-year period from 1960 to 1990.

[6] The 21 irrigation systems that I studied in the 1980s had never been registered. However they featured an organizational system called *kulo samiti or kule bhai,* where social control mechanisms play an important role (Pradhan, 1989).

Also in 1992, the Irrigation Policy was formulated, formally recognizing the WUAs and setting female representation in WUA at 20% minimum. The Irrigation Policy, revised in 2013, ensured a minimum of 33% female members in the WUA's executive committee. It is also stated in the policy that efforts will be made to empower women by providing appropriate training programs for them.

What do these Acts say about the role of women in WUA? Under the 1992 Water Resources Act, the Irrigation Regulation, formulated and amended in 1964, stated that WUAs can be registered in the DOI through the Irrigation Development Division (IDD) at the District level. It also states that at least 33% of the WUA Executive Committee should consist of females (Table 1). The 33% quota is not mandatory, however, and there might be occasions when this proportion cannot be guaranteed, thus invalidating the WUA terms. This situation can be averted by ensuring that 33% of the membership consists of females (Udas, 2014: 201-206). The irrigation systems which are under government support are usually registered, but this is not the case with other irrigation systems. It is estimated that there are 15,000 units of systems in hilly areas and 1,800 units in the alluvial Terai Plains of Nepal.

WUAs can also be registered under the Cooperative Act, although only a few such types of irrigation system are in existence in Nepal. They are usually multi-functional, water-user associations, involved in other areas besides water-related activities.

The total number of WUAs registered at the DOI, according to their records, stands at 1,867, but this total does not include additional information about the WUA.[7]

Table 1 Examples of Female Representation in WUAs, Nepal

S. No.	System name	Year of establishment	Area (ha)	WUA members			% of female members	District
				Total	M	F		
1	Argeli Raj Kulo	> 300 years	48/115	9	7	2	22	Palpa
2	Yampa Phant	100 years	35	9	7	2	22	Tanauhu
3	Kalleritar	25 years	82	11	7	4	36	Dhanding
4	Motipur-Khadwa	150 years	1500	15	11	4	26	Rupendehi
5	Tanting System	50 years	243	13	9	4	30	Jhapa
6	Laxhmibering	40 years	110	11	8	3	27	Jhapa
7	Soyak System	25 years	-	11	7	4	36	Illam
8	Tokha	97 years	60	0	0	0	0	Kathmandu
9	Bagkhor	33 years	40	11	7	4	36	Surkhet
10	Panchakanya	200 years	600	16	11	5	31	Chitwan
11	Chhatis Mauja	150 years	3500	13	12	1	8	Rupendehi
12	Tallo Medibung	39 years	300	15	12	3	25	Taplejung
13	Subedar Kulo	54 years	50	7	5	2	40	Sindhupalchowk
14	Golai Jiula	13 years	65	11	8	3	27	Bajhang
15	Kankai IS	44 years	7000	31	27	4	14	Jhapa
16	Sitagunj, SMIS	50 years	8000	13	13	0	0	Sunsari
17	Jamara system	112 years	4133	21	17	4	19	Kailali
18	Mahakali Irrigation (Block B)	30 years	5000	11	7	4	36	Kanchanpur
19	Janakalyan	45 years	116	11	8	3	27	Chitwan
20	Kasi Kulo	60 years	40	11	8	3	27	Pyuthan
21	Ghatteplot	-	60	11	6	5	45	Dadeldura
22	Itura	3 years	60	11	9	2	18	Surkhet
				272	**206**	**66**	**24.3%**	

Source: International Network on Participatory Irrigation Management (INPIM)/Nepal, 2012, and information from visits on different occasions. Note that the jointly-managed irrigation systems have very low women representation in WUA

[7] The records of the WUA, as registered at the DOI, were made available to the study team by Mr. Basu Dev Timilsina, Senior Divisional Engineer (SDE) at the Institution Development Division, DOI, in December 2014.

Membership Eligibility?

The membership in irrigation systems is based either on land ownership or on the individual's water share. Land ownership is more prevalent among male members. Female members cannot function as legitimate members of an irrigation system nor can they hold decision-making positions.

There are different forms of ensuring membership and water rights in an irrigation system. The norms are either traditionally accepted by society or they are legally guaranteed by the national statute, called *Muluki Ain* (General Code) in Nepal. Provisions to secure the water rights are:

a. Investment at the initial stage of irrigation infrastructure construction, as in the Chherlung Thulo and Tallo Kulo of Palpa District;
b. Water rights based on land ownership;
c. Family ownership of the source of water;
d. Prior appropriation water right;
e. First water right;
f. Second water right (rights based on crop-paddy earn first priority) and implementation.

Land-ownership Status of Women, Water Rights and Household Headship

Even the formal laws and regulations did not recognize women's access to land *per se* in past years. Inheritance law in Nepal states that wife and sons, but not daughters, are entitled to receive the property of a husband or father. Only unmarried daughters above the age of 30 are entitled to an equal share of their father's property, provided they remain single. Efforts were made for equal entitlement to inheritance rights between sons and daughters but legislation was not passed. At present, women control 5% of landholdings and 10% of households have landholdings in a woman's name (Adhikary et al., 2009: 15). It is reported that 10% of women are land owners in hilly areas, while in the Terai Plains this proportion drops to 5%. Land ownership has implications for the membership of women in WUAs. In other countries as in Nepal, women participation and representation in WUAs has not been encouraged (Illo, 1998).

In the case of water rights for women (Andhi Khola Irrigation System), membership in the WUA Executive Committee is on the basis of water rights, not land ownership. However, membership of the Executive Committee is not governed by water rights, to which women are equally entitled within the command area. The Executive Committee is composed of members, with 33% women membership. It appears that the 33% rule for female membership in WUA was made by male members on spurious principles, rather than on equality of water rights basis.

Role and Responsibilities of a WUA

The functions of a WUA are summarized in Table 2 and Figure 1.

Table 2 Irrigation Functions Matrix

Functions	Activities	Responsibility	Responsibility	Remarks
Water use function	Acquisition[8]	Male	Female	Traditionally intake and main canal repairs open to men only but now open to both sexes
	Allocation	Male		Decision by WUA
	Distribution	Male	Female	Open to both sexes
	Drainage	Male	Female	Open to both sexes
Construction function	Design[9]	Male		Women rarely consulted
	Construction[10]	Male supervisor	As worker	Women work as laborers
	Operation	Male	Female	Open to both sexes
	Maintenance	Male	Female	Labor/cash contribution from both sexes
Organizational function[11]	Decision- making	Male		Membership in WUA not available
	Communication	Male		Usually male
	Resource mobilization	Male decision-making	Female accepts decision	Women adhere to decisions issued by WUA
	Conflict resolution	Male		Male takes role on behalf of WUA

Source: Uphoff, 1986: 33.

[8] Water acquisition includes activities of intake repair as well as main canal maintenance. Traditionally, these activities were the preserve of men but in contemporary Nepal, women participate in these activities.

[9] During the design stage of the system, women were hardly consulted. With the women-friendly design campaign, design engineers are forced to consult female users of the system.

[10] Male members would act as supervisors of construction or contractors but women only as construction workers.

[11] At the organizational level, women play an insignificant role. Land ownership is the ruling principle for membership in WUAs. Since 90% of the female population does not own any land, women are not eligible for membership of WUAs and cannot participate in the organization's decision-making. Females only have indirect representation.

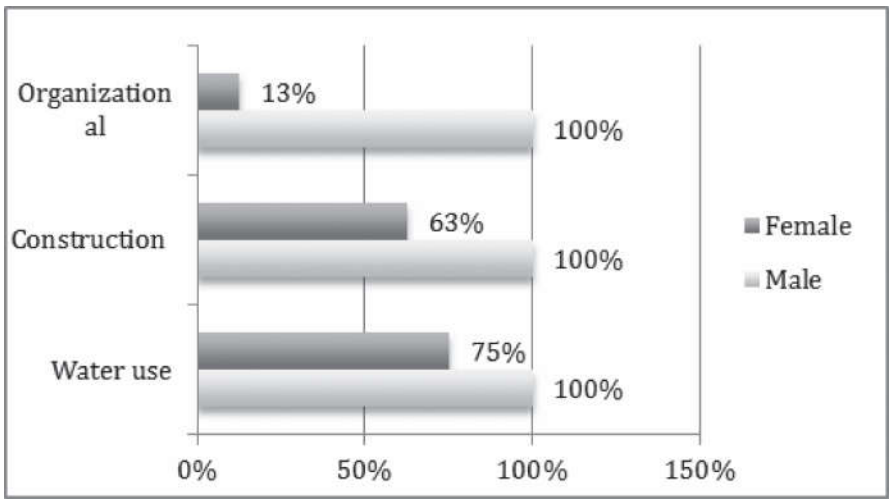

Figure 1 Male and Female Involvement in Irrigation Functions (in%)
Source: compiled by the author with data drawn from Table 2 (Uphoff, 1986: 33).

Gender Empowerment in Nepal

In general terms, women's participation in WUAs is not only important for addressing women's water needs but also for ensuring their stake in water-resource ownership. Gender empowerment in Nepal is relevant in encouraging female participation in irrigation water management. The events listed below indicate the longitudinal change on women's role streamlining in different sectors:

Table 3 Gender-empowerment Related Activities in Nepal

Year	Activities related to gender empowerment in Nepal
1853	*Muluki Ain* (General Code), revised in 1964, stipulates that a wife and son can be heirs of the husband and father respectively, but daughters are barred from inheriting property.
1907	Women's movement for equal rights began in S. Nepal through protests against child marriage.
1940	Women played a role in opposing the Rana[12] regime.
1947-1952	Six groups of women formed as sister organizations to the political parties, demanding equal voting and education rights with men.
1960-1990	During the *Panchayat* period, the government became more exposed to the outside world. The government signed international treaties in favor of the world movement for women.
1975	The UN Declaration on Women's Rights prompted the government to address women's issues. A government representative attended the first International Women's Conference, held in Mexico.
1977	Women Services Coordination Council established as a government body under the Social Services Coordination Council.
1975-1980	The Sixth Periodic Plan recognized women for the first time as equal shareholders of development. Subsequent plans included 'plans for women' as a separate chapter.
1980-1985	The Sixth Five-Year Plan programs for women focused on increasing women's skills and income-generating capacities.
1985-1990	The Seventh Five-Year Plan included more detailed programs for women in recognition of their lower rates of participation in different activities. The plan emphasized the introduction of a quota system as a means to increase women's participation, training programs in the educational sector, and also expressed a commitment to bring about legal changes in all aspects, to either increase or enable women's participation.
1990	Development of the Agricultural Perspective Plan, which included a brief paragraph on gender, and stressed the need to include women in all development activities.
1992	Irrigation policy recognizes WUAs as a legal, local-government body.
1992-1997	The Eighth Five-Year Plan reveals government's commitment towards gender-equitable society through policy amendments to widen women's participation. Key points included the amendment of laws hindering women's development and increasing women's participation in political decision-making through compulsory female involvement in resource-users' committees.
1993	Ministry for Women and Social Welfare was opened to coordinate all the women's sections in the different ministries. This Ministry acts as the lead agency for women and children's development, and plays a key role in formulating national policies and ensuring the integration of women and children's issues into national development policies.
1997	National Work Plan for Gender Equality and Women's Empowerment is formulated, consisting of 12 sectors that require attention: women; poverty; education; health; violence; armed conflicts; economy; policy making; institutional mechanisms; human rights; environment; children.
1997-2002	The Ninth Five-Year Plan emphasized the integration of women into the development mainstream, stressing institutional development and formulation of gender-related policies/plans in addition to the implementation of these policies/plans. Based on the Ninth Plan and the policy guidelines, regulatory policies were formulated for the irrigation, in which involvement of women in users' committees was mandated to 20% in irrigation.
2000	The Irrigation Regulation recognizes WUAs and mandates that at least two women form part of the nine-member committee.
2003	Revised the Irrigation Regulation by removing compulsory participation of women and instead "encourage[s] thirty-three percent participation of women in users' committees if available."

Source: Udas, 2006.

[12] A dynasty that ruled the Kingdom of Nepal from 1846 until 1951, when a new constitution was introduced.

Congeniality and constraints for increasing female participation in WUAs will be discussed in the following section. The literature review illustrates the events leading to increased female involvement in rural agricultural and irrigation spheres, an increase linked to the out-migration of male members from the households. In rural areas, females undertake other tasks in addition to agricultural tasks and irrigation, including participation in desilting canals, paying the irrigation fee, irrigating the crops at the farm, and so on. However, their participation in the Executive Committee and in the General Assembly of users for decision making on water management, distribution of water and resource mobilization and in the meetings of the WUA, has been nominal or non-existent (Ghimire, 1995).

It is illustrated in the Irrigation Regulation of Nepal (2002) that, where possible, 33% of the Executive Committee members should be females. While reviewing the status of female representation of a few WUAs, it is apparent that the prescribed quota has not been complied with, a factor attributed to feelings of uneasiness women experience when dealing with males in matters of business activities in rural areas. Moreover, male members feel that women are ill-equipped to make decisions unaided. Even where women have been recruited, they tend to act as silent observers. These situations seem to be influenced by cultural factors as well as by economic power given to women in the society. The status of women in rural areas differs among different ethnic groups. However, the hypothesis is that membership criteria prevalent in the system determine the representation in WUAs rather than the provision of representation quota.

WUAs are usually studied more for the institutional aspects of its organization, the types of activities they undertake and the resource mobilization for operation and management. In recent years, some changes have been effected in irrigation management and its contribution to numerous other sectors. Nowadays, irrigation is not viewed primarily as a technical enterprise but also as a means for social change, benefit-sharing by all sections of the population and wider participation, including male and female members of the irrigation systems. It has also been observed that women are asserting their role to gain space in irrigation management.

The sociology of women's participation in improving WUAs' performance was never the agenda of the women-empowerment movement in rural Nepal. This is linked to the fact that female empowerment, through increased participation in natural resources management and chiefly in water for irrigation, has never been on the agenda of women's social movement in Nepal, despite the influence exercised by women's movements on areas of other macro-social, political, legal and inclusiveness policy.

The issue being investigated here is about increasing female representation in WUAs for performance improvement in the context of demographic change resulting from male out-migration in rural Nepal. By applying the theory of change and charting the path of change, the situation analysis is accomplished (Harvard Family Research Project, Summer, 2005).

The issue is to look at improving WUAs' performance through increased female representation in the context of demographic change in rural Nepal. The critical group of people in this changing situation is the female farmer in the irrigation system. The changes in women's role can take place through awareness generation, skill development and technical training in irrigation water management, with their participation in these activities enacted through organized efforts of women members in the WUAs (Pulley et al. 2004).

The change that will be indicated in the process through increased female numbers in the WUA Committees will be identified through the case study of those ten systems. The measurable effect of this change will be apparent through active participation played by them in decision-making in water allocation, water distribution, in conflict resolution and decision on resource mobilization.

Typology of Women Participation

"When women were barred by [the] WUA of Kalleritar Irrigation System, Dhanding District, from canal-cleaning work, women farmers appealed to WUA that they should be allowed, like male members, to contribute their labor for canal cleaning and other irrigation related activities. Women were allowed to participate in canal cleaning and other activities on condition that they should be older than 15 and younger than 60 years of age. Thus, they campaigned for their right and avoided paying a fine in the absence of male members in the household". ***Focused Group Discussion, 10 January 2015.***

"The big change that I observed in Rani, Jamara and Kulariya Kulo of Kailali District, is women participation in Desawar (mobilization of manpower for canal desilting), which was not allowed until recently. This has brought women into irrigation management roles".

Interview with Lal Bir Chaudhary, Chairman, Jamara WUA, 2015.

"In the1980s, when I was doing a study on Raj Kulo of Argali, Palpa, women and dalits[13] were not allowed to do canal-cleaning work. As of 2015, women are allowed to work in canal cleaning so that they do not have to pay a fine in the absence of a male member in the household, or send a wage laborer to discharge water obligations; now women are relieved of such restrictions, imposition of a fine or having to pay for a wage laborer. Changes in women's role in irrigation are happening. Still, canal-cleaning work is considered a man's job".

Observation of Prachanda Pradhan, January 2015.

The typology of participation will indicate the level of women's participation in decision-making and in other agricultural activities. Frequently, the typology of participation is as detailed by (Pretty et al., 1995), although its application is more relevant when the irrigation system is in the implementation stage. The typology of participation being considered is the situation where the irrigation system is operating and in need of alternatives to increase female participation in WUAs. Female participation in irrigation management is of two types: a)

[13] *Dalits* are citizens of low social status in the Nepalese caste system.

formal participation through direct representation based on legitimate membership and b) informal participation through relatives of the family (Meinzen-Dick & Zwarteveen, 1998). The mode of participation can vary according to the type of household and position of the women. It is suggested that women participation in irrigated agriculture is higher in female-headed households. In households where a couple has young children, women's participation in irrigated agriculture is limited due to family obligations. In households with older couples, female participation becomes limited (due to old age or sickness). The young female members of the household opt for other activities to earn a living. It is also found that households from rural areas participate more widely in irrigated agriculture than households from urban settings (Bastidas, 1999). Some of these findings are illustrated in Table 4.

Table 4 Typology of Female Participation in Irrigated Agriculture, Particularly in Irrigation Management

Formal Participation.	By defined membership. Attend General Assembly but no voting. Attend General Assembly and vote. Member of Executive Committee (silent participation). Member of Executive Committee (active participation). Women's group representing to WUA to amend or adopt new rules and regulations.
Informal participation through relatives.	Because of non-membership in WUA.
Typology by type of household	
Female-headed household.	More participation.
Household with elderly couple.	Limited, due to old age or sickness
Household with young children.	Limited by family obligations.
Young women.	Search for other income activities.
Rural vs. urban households.	Wider participation in irrigated agriculture in rural areas.

Source: compiled by the author with the help of literature review and fieldwork.

The results of the changes will be indicated by a more active role played by female members in WUAs, bringing increased economic benefit through increased production in agriculture and increased economic power at household level. The long-term benefit is expected in gender equality, empowerment of women at all levels of economic activities and stable agricultural production. The hypothesis is that household composition influences the representation and participation of women in water management and irrigated agriculture. Table 5 shows

that the marginal farmers, contract farmers or share-crop women are directly related to benefits from irrigation but the present legal arrangement does not allow them to be active participants in irrigation systems.

Table 5 Typology of Women with Land Holding Status and Participation in WUA (HH = household; O&M = Operation & Maintenance)

Type of HH	Landholding type	Canal O&M	Ownership of land	Interest/legitimacy of membership
Women-headed HH	Marginal/small	Engaged in canal O&M	Land might belong to the husband	Work in canal-cleaning on behalf of the husband
Share-cropping HH	Cultivating others' land	Engaged in canal O&M	Land belongs to land-owner	Share-croppers not allowed as WUA members
Contract HH	Cultivating others' land for a fixed payment	Engaged in canal O&M	Land belongs to land-owner	Contract farmer not allowed to be a WUA member
Females with large land-holdings	Large land-holding, cultivation through wage laborer/ share-cropping	Contribution through wage laborer	Land might belong to husband or to themselves	No direct interest agriculture, not much interest in WUA
Women from urban areas	Engage laborer or share-cropping	Wage laborer/ share-cropper	Land belongs to husband or to themselves	Not much interest in WUA except for political reasons
Women with cash assets	Cultivation through wage laborer; share-cropping	Wage laborer	Land belongs to husband or to themselves	Limited interest in WUA; eligibility for WUA doubtful

Source: compiled by the author with the help of literature review and field work.

On the basis of the findings in Table 5, more than a quota may be necessary for female members in WUA to ensure the right of contract or share-crop women farmers and their representation in such organizations.

Campaigns related to gender concerns and inclusive policy brought by several political movements - as well as international conventions and women's role defined in Constitutional provisions, concessions on revenue rate at the time of land ownership transfer to women, provision of joint ownership of land between husband and wife - are all important positive steps towards the empowerment of women in different walks of life, including in the activities of the WUAs.

Role Defined by Policy Aspect

It is stated in the 1992 Irrigation Policy and subsequent amendments, including the amendment of 2013, that there is a need for female participation in irrigation WUAs. The Irrigation Policy prescribes female representation in WUA at up to 33%. The recently-amended irrigation policy suggests that training arrangements are necessary to build the capacity of women engaged in irrigated agriculture.

Legal Aspect of Women Representation in WUAs

Based on the Water Resources Act of 1992, irrigation regulation is implemented. It states that, at the time of registration, WUAs need to ensure up to 33% female representation, although this quota is not mandatory and could be lower. Even now, in numerous government-managed irrigation systems, female membership in WUAs is lower than 33%. In 2006, women participation in the National Federation of Irrigation Water Users Association Nepal (NFWUAN) showed that, in 588 WUAs, only four out of 31 districts had 20% representation in WUAs, while five

districts had at least one woman representation. Out of 588 WUAs, only 50 had women in decision-making positions (Udas, 2014).

Role of DOI for the Promotion of Women Participation in WUAs

In Nepal, the DOI is mostly responsible for irrigation development, including feasibility, design, construction and management of irrigation systems. The role of the DOI is gradually changing from only construction of irrigation systems to management of the same, for social and economic change in society. They include the role of the DOI in promoting female participation in irrigation management through WUAs. However, "there are contradictions between gender goals and policies and aspirations of the professionals which are embedded in the incentive structure of the bureaucracy [...] the dominant professional culture of irrigation engineers is strongly masculine, linking professional performance to masculinity. The prevailing incentives and culture of the irrigation bureaucracy stand in the way of achieving any progress in terms of gender goal" (Udas & Zwarteveen, 2010).

Now the DOI has to meet the new social and economic challenges and it must address some important questions when it seeks to adapt to the changing situation. A sizeable gap characterizes the gender issues from the field (Clement & Rayamajhi, 2014). Some of these issues are: a) when will the DOI achieve gender-balance in its organization; b) will the DOI be able to address the socio-economic issues of social inclusiveness; c) are these only externally donor-driven values or can the organization take the initiative and promote these

values in the DOI programs (Pradhan & Subedee, 2007). This is more applicable when the DOI is promoting Irrigation Management Transfer (IMT) and participatory irrigation management. Donor-funded projects like the Irrigation and Water Resources Management Project (IWRMP), funded by the World Bank, and the Community Managed Irrigated Agriculture Sector Project (CMIASP), funded by the Asian Development Bank, have special gender-sensitive provisions. However, they have been only project-based activities and they may be discontinued after the project period is over.

In order to ensure the inclusiveness of stakeholders, the Ministry of Irrigation (MOI) established an Environment Section tasked with overseeing the issues of gender equality and social inclusion (GESI), Inclusiveness and Environmental concerns. Similarly, the DOI established Social, Environment and Climate Change Section under its own Planning Division. Water Resources Project Preparatory Facility (WRPPF) has recently prepared draft guidelines regarding mainstreaming "Gender Equality and Social Inclusion" (DOI/WRPPF, 2015). One way to bring gender issues to the fore is by incorporating gender concerns in irrigation planning in the DOI and ensure that it constitutes a tool for monitoring and evaluation (Jordans, 1998).

Role of Training to Enhance Women's Decision-making Capacity in WUAs

The DOI has a unit called Irrigation Management Training Program (IMTP) in the Institution Development Division. Similarly, donor-funded projects like IWRMP, CMIASP and RJKI Modernization Projects have provisions for training to be extended to female farmers. Analysis of the status of training programs in these projects, and interviews with project personnel about training and farmers' comments, indicate that the planning of training programs is not systematic. In a questionnaire with a sample of 156 female farmers, over 90% (i.e. at least 140 female farmers) reported that they had not received any kind of irrigation-related training. On numerous occasions, information is not available about the type of training programs or the content of any training sessions available. A commissioned evaluation report on training programs under component B of IWRMP of the DOI project, states that it is difficult to receive documents regarding training programs undertaken during project implementation. This corroborates the notion that mismatches exist between the resources spent and the impact of training programs. Training programs for women, as organized by the DOI, revolve around income-generation and agriculture production. Both the training personnel and the farmers confirmed that the women had never participated in training programs on the technical aspects of irrigation and irrigation management (Pant, 2013).

During the focus group discussions, women in numerous irrigation systems felt that they did not possess adequate technical knowledge of irrigation systems and their management. Because of this deficiency, the women felt they were unable to manage irrigation work. On the other hand, male members feel that they do not have the requisite knowledge and are discouraged from assuming managerial roles in irrigation management. It is reported that the Panchakanya Irrigation system of Nepal demonstrated that women can assume managerial responsibility after receiving technical training (Pulley et al., 2004). With skill and technical knowledge, through participation in water management, women can influence the efficiency of irrigation, as well as the equal distribution of resources, productivity and cropping intensity.

Conclusions

Changes are observed where women have been participating in certain irrigation-related activities. Their roles have not been assured to be active in the decision-making process of WUAs and water management. The provision of quota is also a lukewarm exercise. It is still strongly felt that implementing agencies like the DOI cannot, as yet, develop a culture that promotes women's participation in irrigation management activities.

In the role analysis regarding irrigation functions, as proposed by Uphoff (1986), the majority of irrigation-related functions are performed by men. Recent socio-demographic changes have made irrigation activities accessible to women. This development, however, is not

related to female emancipation or empowerment, but rather dictated by necessity.

One of the major limiting factors for women as active participants is the lack of legitimacy for membership in the WUA. The criteria are set on the basis of land ownership but only around 10% of women have land ownership rights. In the hilly areas, this low proportion decreases further to 5% in a *terai.* Hence, large numbers of women are deprived of legitimate membership of WUA. Besides land ownership, water rights constitute another set of criteria but such systems are not large in number.

Membership on the basis of household (HH) looks feasible but the property ownership remains a male prerogative. The woman qualifies for ownership not as an automatic right but when approved by a man.

Usually, marginal farmers, share-croppers or contract farmers are the cultivators requiring water for irrigation. These groups of people have a higher need for irrigation than women who belong to large landholdings, with more assured income, either from land or from remittances. Such groups of women do not need to engage in irrigation because they can hire wage laborers for irrigation operation and maintenance. Since they are not directly involved in irrigation activities, they may be ineffective members even when they join a WUA. A mechanism needs to be found for women to be represented in the WUA decision-making process.

Women have become active and successful figures in organizing and operating women's cooperatives, by becoming fully-fledged members. They have become effective members in community forestry programs such as the Aama Samuha (Mothers' Club). Effective membership and success in the WUAs has proved elusive, though.

Even by arranging membership on the basis of household, the woman's representation will be only proxy, on behalf of her husband or a male family member. Can such representation be called formal representation? There will be a shift about the basis of representation. It is not so much male vs. female but rather it is on the basis of household, hence women's rights for representation are not secured.

How can women be legitimately elected to membership of the WUA? There are legal and practical considerations but the following suggestions could be put forward:

a) Joint ownership of land between husband and wife (provision being implemented jointly by the Land Revenue Office in Nepal and the Executive Decision of the Government of Nepal). The DOI plans to run a campaign in this regard;
b) Insert a provision in the irrigation regulations that members from three generations can inherit property after the death of the head of the household;
c) Make provisions for tax exemptions when land ownership is secured by a woman. This provision ensures that women become legitimate members of WUAs.

These provisions are even stronger than the terms of the quota system, which is, by and large, a formality not strictly enforced for the 33% female membership requirement, which is not mandatory. Even in DOI-implemented irrigation systems, the terms of the quota are not strictly adhered to.

Acknowledgements

The author acknowledges the assistance of Pravakar Pradhan and the experience gained through the study of the IFPRI on the role of women in WUAs in the context of changing the demographic scenario in rural Nepal. The author also wishes to acknowledge the financial support of IFPRI in this project.

References

Adhikary, J., Nepali, B.B. & Gurung, R. (2009). Access to land and Marginalization in Nepal: A Political Economic Approach. Kathmandu: SIRF/RF/07.

Bastidas, E.P. (1999). *Gendered Issues and Women's Participation in Irrigated Agriculture: The Case of Two Private Irrigation Canals in Carchi, Ecuador,* Research Report 31, Colombo: IWMI.

Clement, F. & N. Rayamajhi. (2014). Men, Women and Irrigation: Looking Up from the Field, in *Proceedings of National Irrigation Seminar on Irrigation and Cultivable Land: Challenges and Opportunities.* DOI: Kathmandu.

DOI/WRPPF (2015). Gender Equality and Social Inclusion Mainstreaming Guidelines (Draft Final-Summary): Kathmandu.

Ghimire, S. (2005). Women and Irrigation in Nepal: Context, Issues and Prospects, in *Occasional Paper in Sociology and Anthropology,* Vol. 9, pp. 176-193, Kathmandu: Tribhuvan University.

Global Gender Gap Report (The). (2013). Insight Report, World Economic Forum, Geneva, Switzerland, http://www3.weforum.org/docs/WEF_GenderGap_Report_2013.pdf

GoNepal/Irrigation Policy (2013). Kathmandu: Ministry of Irrigation.

Harvard Family Research Project, Theory of Change, XI/2, Summer 2005.

Illo, J.F. (1998).Women and Irrigator Associations in the Philippines: Context and Outcomes of Collective Action, in *Gender Analysis and Reforms of Irrigation Management* (D. Merry & S. Bhaviskar, eds.), Proceedings of the Seminar on Gender and Water, Colombo: IWMI.

Jordans, E.H. (1998) Strategies to incorporating Gender in Irrigation Planning, in D. Merry & S. Bhaviskar (eds.) *Gender Analysis and Reforms of Irrigation Management; Proceedings of the Seminar on Gender and Water,* Colombo, IWMI.

Lam, W. F. (1966). *Governing Irrigation Systems in Nepal, Institutions, Infra-structure and Collective Action,* Institute of Contemporary Studies, Oakland: California.

Meinzen-Dick, R. & M. Zwarteveen. (1998). Gendered Participation in Water Management: Issues and Illustration from Water User's Associations in South Asia, *Agriculture and Human Values,* 15, pp. 337-345.

Pant, D. (2013). *Review and Assessment of Training and Institutional Strengthening Activities conducted under Component B of IWRMP.* Kathmandu: DOI, IWRMP.

Pradhan, P. (1989). *Patterns of Irrigation Organization in Nepal, A comparative study of 21 Farmer Managed Irrigation Systems.* Colombo: IIMI.

Pradhan, P. & S. Subedee. (2007). Department of Irrigation's Role in the Changed Context: Perception of the Outsiders, in *Proceedings of the National Workshop on Irrigation Development and Modernization: A Roadmap to New Nepal* (July 2-3, 2007). Kathmandu: DOI.

Pretty, J.N, I. Guijt, J. Thompson & I. Scoones. (1995). *Trainer's Guide for Participatory Learning and Action.* London: IIED (International Institute for Environment and Development).

Pulley, T.A., S. Lateef & A. Shrestha. (2004). Building Gender-Responsive WUAs in Nepal, in InterAction-CAW and IIRR (ed.), *Gender Mainstreaming Action: Successful Innovations in Asia and Pacific.* Philippines: IIRR.

Udas, P.B. (2006). *New Voices, Perspectives: Quota Systems and Women's Participation - Lessons from Water Policy in Nepal,* United National International Research and Training Institute for the Advancement of Women.

Udas, P.B. (2014). *Gendered Participation in Water Management in Nepal: Discourses, Policies and Practices in the Irrigation and Drinking Water Sectors,* PhD Thesis, Wageningen University, The Netherlands.

Udas, P.B. & M.Z. Zwarteveen. (2010). *Can Water Professionals Meet Gender Goals? A Case Study of the Department of Irrigation in Nepal,* Online Publication: Gender & Development, 18(1):87-97. http://dx.doi.org/10.1080/13552071003600075

Uphoff, N. (1986). *Improving International Irrigation Management with Farmer Participation: Getting the Process Right.* Boulder, Colorado: Westview Press.

Annex 1

Districts and Systems visited

IS = Irrigation system

DTW = Deep tube well

District	**System Name**
Dhanding	Kalleri IS
Tanauh	Yampaphant IS
Chitawan	Janakalyan IS
Rupendehi	Chhatis Mauja IS
Palpa	Rajkulo, Argeli
Banke	Samshergunj DTW
Surkhet	Itaura IS
Kailali	Jamara IS
Kanchanpur	Mahakali IS
Dadedhura	Ghateplot, Jogbura
Puythan	Kashi IS

Annex 2

Field Level Data and Information

Tables are generated on the basis of data collected through household surveys conducted in December 2014 in the irrigation systems listed in Annex 1.

Table 2.1 General Information of interviews with WUA members

Regions	HH	HH[1] type				UWA member			Land-holding (ha)
		Women headed	Young couple	Old couple	Others	GM[2]	EM[3]	Others	
Far-western	60	57	0	2	0	38	4	3	32.13
Mid-western	22	22	7	4	0	15	2	1	6.56
Western	62	60	1	0	2	56	4	0	18.51
Central	12	12	0	1	0	9	2	0	3.29
Total	156	151	8	7	2	118	12	4	60.49

1 HH = household
2 GM = General member
3 EM = Executive member

Table 2.2 Remittances and responsibility to agriculture activities

Regions	HH No.	Remittances to HH		Responsibility to agriculture activities							
		Yes	No	Wife	Mother	Sister	Brother	None	Land fallow	Share cropping	Others
Far-western	60	56	4	52	4	0	0	1	0	4	7
Mid-western	22	18	4	16	4	2	0	0	0	2	1
Western	62	54	8	51	14	0	2	0	1	5	6
Central	12	10	2	11	0	0	0	0	0	1	0
Total	156	138	18	130	22	2	2	1	1	12	14

Table 2.3 a: Role performed by female household members in the absence of male out-migrated members at home

Regions	HH No.	Roles performed at home				
		House/roof repair & maintenance	Shopping for everyday items	Payment of		Dealing with government offices
				Taxes	Bills	
Far-western	60	20	56	55	54	43
Mid-western	22	2	19	18	18	14
Western	62	19	54	52	52	46
Central	12	1	12	9	9	8
Total	156	42	141	134	133	111

Table 2.3 b: Role performed by female household members in the absence of male out-migrated members in the community

Regions	HH No.	Role performed in the community					
		Forest user groups	Irrigation groups	Drinking water groups	School management committee	Farmer groups	Attending social events
Far-western	60	28	38	7	10	35	42
Mid-western	22	11	13	6	1	15	16
Western	62	23	38	18	1	21	42
Central	12	4	9	2	0	4	7
Total	156	66	98	33	12	75	107

Table 2.4 Male Out-migration and its impact on household level

Regions	HH No.	Positive impact			Negative impact			
		Enhanced economic status	Creation of wage labor employment in agriculture	Tendency to move to urban area for children's education	Abandoning agricultural land due to lack of farm labor	Reduced production/ productivity	Labor shortage leading to lack of interest in subsistence farming	Feeling insecure due to absence of family members
Far-western	60	55	41	36	20	17	14	45
Mid-western	22	18	14	14	9	5	5	11
Western	62	49	44	39	7	7	1	12
Central	12	11	9	9	2	2	0	4
Total	156	133	108	98	38	31	20	72

Table 2.5 Women participation in irrigation activities

Regions	HH No.	Irrigation Activities									Irrigation information about water			Irrigating the agricultural land					
		Intake repair			Main canal repair			Field bund repair			General assembly	Committee members	Neighbor	By herself		Family member		Hired labor	
		Own	Pay fee	Send labor	Own	Pay fee	Send labor	Own	Pay fee	Send labor				Day	Night	Day	Night	Day	Night
Far-western	60	42	23	5	45	12	5	44	11	5	0	4	52	53	46	27	28	25	29
Mid-western	22	20	1	0	19	1	0	17	4	0	4	0	13	15	8	9	13	2	0
Western	62	28	15	11	41	16	9	46	14	7	13	40	23	49	34	26	26	4	6
Central	12	10	2	0	10	2	0	6	5	1	0	3	8	10	8	5	6	1	1
Total	156	100	41	16	115	31	14	113	34	13	17	47	96	127	96	67	73	32	36

Table 2.6 Membership in WUAs

Regions	HH No.	General assembly meeting		Executive committee member		Participate in executive committee meeting			Contribution		
		Yes	No	Yes	No	Regularly	Sometimes	Never	Cash	Kind	Labor
Far-western	60	51	8	16	43	20	40	0	26	3	46
Mid-western	22	21	1	11	11	13	8	0	6	1	15
Western	62	61	1	6	53	39	16	1	49	1	41
Central	12	12	0	9	3	7	5	0	5	0	10
Total	156	145	10	42	110	79	69	1	86	5	112

Table 2.7 Women's Participation in Training Programs

Regions	HH No.	Women trained in irrigation		Participants		Training types			
		Yes	No	Executive member	General members	Operation & maintenance	WUA office management	Accounting training	Income generation training
Far-western	60	8	52	13	10	5	4	3	6
Mid -western	22	14	8	6	12	13	6	3	3
Western	62	2	60	1	1	0	0	0	1
Central	12	1	11	1	1	0	0	0	1
Total	156	25	131	21	24	18	10	6	11