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Gender differences in water security and capabilities in Far-West Nepal

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Abstract

As in other parts of the world, approaches to water resource development in Nepal are popular as technical endeavours, focusing on engineering solutions at the expense of ignoring issues of gender and social well-being. Water specific work in Nepal revolves around the nature of participation of women in water resource user groups, however lack attention to the changing rural dynamics in the villages that govern gender relations and shape women's capabilities around water use, access and management. Understanding what factors impact women's capabilities is important in informing plans and policies on gender equality and sustainable use of water resources. This research investigates the norms and practices that govern local water resource management and the role it plays in enhancing or limiting capabilities of women in rural villages in far-west Nepal.

Two villages in the hills (Doti) and one in the plains (Kailali) have been studied using qualitative research tools such as focus group discussion, village mapping, historical timelines, key informant interviews, household interviews and participant observation. To validate qualitative data, we also draw on quantitative data from the basin-wide survey in far-west Nepal. We frame our analysis around the conceptual framework of capabilities developed by Sen (1990) and literatures on social capital.

The findings suggest that among other factors, social capital (social networks, trust and institutions) is influential in shaping capabilities in relation to water resource management. Social capital is influenced by gender and other social identities such as caste, class, age and disability. We argue that the existing configuration of local water governance is informed by traditional gendered norms and practices which reinforce gender inequality and deprive women from equal access to and benefit from water resources. This study further identifies that for effective and just management of water resources, women's social capital and capabilities must increase, a process which also builds individual capacity and enables collective action in the community.

Keywords: *capabilities; gender; social capital; water security, Nepal*

I. Introduction

Access to water is a key to human survival and well-being. Water access defines good health, food security, livelihoods and the fulfilment of spiritual and cultural needs. Nonetheless, not everyone has equal access to water and suffer distress and poverty. Various factors have been documented to facilitate and curtail equal access to water resources, which includes both biophysical and social factors. Among them gender differences in water access and management is prominent. The gender difference in access to water enlarges with other intersectional identities of social beings such as caste, class, age, disability, location and so on (Das and Hatzfeldt 2017). Basically, the poor and marginalized with limited access to assets, networks and livelihood options face greater vulnerability in times of change and uncertainty (Ibid).

The advocacy for equal inclusion of both men and women to plan and manage gradually depleting and scarce water resources is immense (Naiga, Penker and Hogl 2017). Moreover, water supply scarcity has been widely attributed to poor non-inclusive water governance (Partnership 2002). The argument is since women, more than men, deal with water given by their gender role both in domestic and productive water use, women equally should be encouraged to be water managers (Cleaver 1998). This is important especially from two perspectives. First, the issue is not limited to unequal access to water for domestic and productive use but the concern is also about the increasing water risks and conflicts in terms of water scarcity and water-induced disasters. Water scarcity and disaster impact human well-being negatively and compound poverty and inequalities in communities. Second, due to changing family structures, changing lifestyle, fragmented land holdings and increasing food insecurity, men are increasingly out-migrating from the villages in search of better livelihood options. The declining interest of men, especially youths, in agriculture as a livelihood option is documented widely. In such a scenario, women are responsible for the household, including agricultural and other livelihood activities (Jaquet et al. 2016). However, due to unequal gender power relations, women, especially from vulnerable households, do not have influence on water decision-making (Upadhyay 2003). Research indicates that even the provision of women quota has been very elusive with regard to meaningful representation of women in water user associations (Pradhan 2015, Prokopy 2004, Wambu and Kindiki 2015.).

Despite a large body of literature exploring women's role and participation in water management, few studies have examined how women's capabilities shape and are shaped by access to water resources and related benefits. Existing literature investigating women's capabilities with regard to access and management of water resources indicates both institutional and individual attributes constraining women's effective participation in water management (Naiga et al. 2017, Ahmed 2009). A capability approach goes beyond a utilitarian approach to water access to position water security as a hydro-social process (Jepson et al. 2017). A notable work in this regard is that of Mehta (2014) who focuses away from volumetric issues of supply, demand and considerations of utility and efficiency and relates water access to freedom, capabilities and human well-being. Likewise, the recent work by Jepson et al. (2017) proposes 'hydro-social analytical framework to assess the ability of individuals to engage with and benefit from a sustained hydro-social process that supports water flows, water quality and water services in support of human capabilities and well-being' (p. 2).

This research recognises the unequal human capabilities of men and women and also among women due to unequal social and political circumstances (Nassubaum 2000) and builds on a capability approach. We investigated access to water along varying intersectionality and discuss the inequities in capabilities and well-being of women in the rural villages of Doti in the hills and Kailali in the plains.

2. Methodology

We draw on data collected in two hamlets of Doti and one hamlet in Kailali district in far-western Nepal. These hamlets were prior selected by Digo Jal Bikas (DJB) research project (www.djb.iwmi.org) based on its biophysical and social characteristics. Respondents were selected using purposive sampling. The data was collected in April and May 2017. A range of different qualitative tools such as village mapping, historical timeline, key informant interview, in-depth interviews, transect walk and participant observation was used. The raw data was coded using QDAminerlite following conceptual framework on capabilities developed by Sen (1990) and tried to connect it with the social capital approach.

3. Study Area

Each of the three studied hamlets (Fig. 1) consists of more than 5 villages. While in Doti, the villages are in majority inhabited by Chettri and Dalit households, villages in Kailali were distinctly marked by various ethnic groups such as Tharu, Rajhi, Madehsi and Pahadis (Brahmin/Chettri). To study a big area and diverse ethnic composition within stipulated time and resources posed a serious limitation to the study.

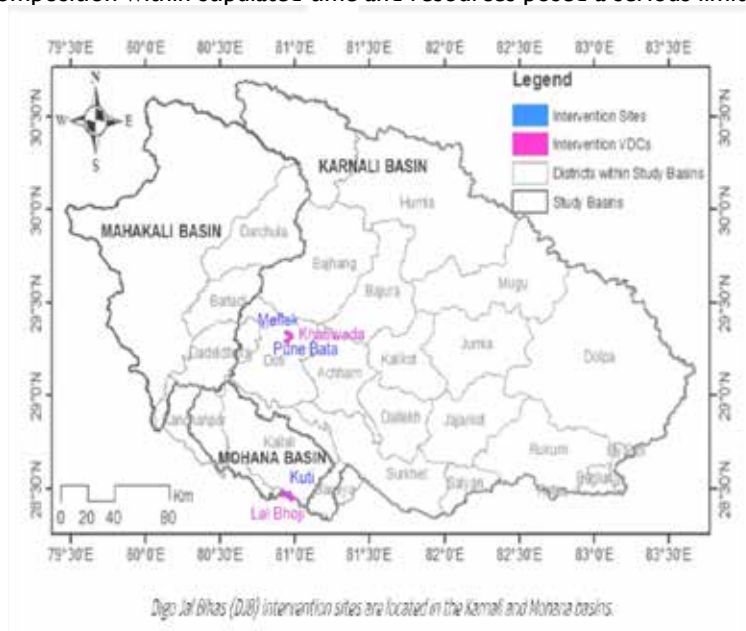


Figure 1: Location map of three study hamlets Doti and Kailali (Source: IWMI, Nepal)

4. Conceptual Framework

4.1 Sen's idea of capabilities

In Sen's perspective, justice is defined in terms of choice and freedom of the people involved, that is their capabilities to achieve the functioning (i.e., the 'beings' and 'doings') that they value (Sen 1999). Sen suggests 'the question of gender inequality can be understood much better by comparing those things that intrinsically matter (such as functioning and capabilities), rather than just the means [to achieve

them] like resources. According to him, the issue of gender inequality is ultimately one of the disparate freedoms' (Sen 1992).

The capability approach contrasts with philosophical approaches that concentrate on people's happiness or on the means to achieve well-being such as access to resources. Sen argues that policies and development programs should focus on what people are able to do and be, on the quality of their life, and on removing obstacles in their lives so that they have more freedom to live the kind of life that, upon reflection, they have reason to value. The capabilities approach brings out the relationship between the public and private spheres of society and the implications of private inequalities, especially gender inequalities, in the establishment of social justice (Sen 2004). The capability approach has notably been adopted by Nussbaum (2003) to analyse gender justice – Nussbaum, however, offers a different stance on the capability approach by providing a list of ten central human capabilities, that are related to the body, mind and environment. Her approach contrasts to Sen's argument in that the definition of capabilities should be context-specific and based on open discussion and deliberation.

4.2 Social capital

Formal and informal relationships are central to the concept of social capital. It is defined as the personal relationships which are accumulated when people interact with each other in families, workplaces, neighbourhoods, local associations and a range of informal and formal meeting places. It is through such relationships that people reassert and renegotiate the rules governing the access to resources in society and influence the distribution, control and transformation of assets (Bebbington 1999, 2035). Individuals with a strong social network and associations will have stronger capabilities to confront with shocks, vulnerability and poverty and receives new opportunities to maximize their assets (Moser 1996). Possession of social capital builds new capabilities and individuals improve their welfare. New capabilities allow individuals to create new connections and access new networks (Migheli 2011).

The importance of social capital in establishing individual well-being has been increasingly under discussion. Especially in the context of Nepal where kinship and networks historically have determined the distribution and ownership of resources, it becomes imperative to study the role it can play in sustainable resource use and development. It is important to know about the role of social capital in producing new and possible hidden forms of gendered and social exclusion and its impact on the material and social well-being of men and women. Existing studies on social capital are suggestive of enhanced collective behaviour in the community. Research indicates that better social capital helps the communities respond to crisis effectively (Helliwell, Huang and Wang 2013).

4.3 Capabilities and social capital

Limited attempts have been made in the past to explore interlinkages between capabilities and social capital. Most of the existing literature investigates the importance of social capital in enhancing organisational, entrepreneurial and intellectual capabilities. Micro-level studies on capabilities and social capital are rare. Some scholars posit social capital as an important determinant of human capital which later they argue form the basis for inclusive growth (Dinda 2014). What is common in all these studies is the focus on the quality of a relationship between members which as Giraud et al. (2012) put forward facilitates human and social development. They draw on Sen and Nussbaum's capability approach and devise a Relational Capability Index (RCI). RCI focuses on three dimensions related to relational capabilities– 1. To be integrated into networks; 2. To have specific attachments to others, including friendship and love;

3. To commit to a project within a group: which aims at serving a common good or a social interest, to take part in decision-making in a political society. Ostrom and Ahn (2007) describe social capital as a synthesizing approach which impacts the cultural, social and institutional capacity of the community members to deal with collective action problems. Similarly, Ireland and Thomalla (2011) see social capital as an important component of collective action for building the adaptive capacity of the community to adversities. Migheli (2011) on the other hand argue for a dynamic connection between social capital, capabilities and functioning. According to his theory, the ability to attain new capabilities is enhanced by the possession of social capital; hence investing in its accumulation allows individuals to improve their welfare. Furthermore, new capabilities allow the individual to create new connections and access new networks, accruing his or her stock of social capital and opening the door to the possibility of attaining new capabilities.

4.4 Social capital and gender

Research analysing social capital from a gendered perspective is rare. Gender dimensions of social capital have been paid less attention in the literature on social capital (Fox and Gershman 2000, Molinas 1998). Scholars argue that the investigation of social capital is incomplete without investigating gendered hierarchies within which social networks are forged (Silvey and Elmhirst 2003). The authors also theorized social capital that exists within a broader context of gender inequality can exacerbate women's disadvantages, as women remain excluded from the more powerful networks of trust and reciprocity that exist among men (Ibid). Westermann, Ashby and Pretty (2005) find significant differences in the gender aspects of social capital impacts, the activities and outcomes for natural resource management groups.

4.4. Justice, well-being and capabilities in water resource development

Water is a key component of human well-being. Whereas access to water for hygiene and sanitation is a key pre-requisite for bodily health and dignity. It is also a critical input for farming and rural livelihoods. Water also has a deep cultural, spiritual and symbolic value in South Asia, as in many other parts of the world and at the same time, supports healthy ecosystems and environment. The mainstream approach to water resources development and management, e.g. drawing from integrated water resource management (IWRM), has been criticised for delinking water issues from socio-political processes and issues related to social and gender equity around use, distribution and management of water resources (Mehta 2006). Generally, water policies worldwide have been largely guided by markets and efficiency models, whereas they have rarely considered the needs and the interests of the marginalised (Syme et al. 2008). One of the reasons lies in the way water resources development has been framed. The latter is represented as a technical endeavour, where the objective is to control and distribute biophysical resources and that is supported by engineering solutions (Allan 2005, Mehta 2006). Its impacts have been largely evaluated in terms of economic efficiency, whereas there has been less attention on how water resource development affects social and environmental justice and well-being.

Conventionally, water's contribution to well-being is measured in terms of quantity, quality, regular supply and proximity to water sources. Mehta (2006) proposes to adopt broader values – freedom to choose, decision-making, social relations, autonomy and control, culture and identity and security. These broader values evaluate social exclusion, social displacement, and inequities in water supply and use, which have tangible/intangible implications for livelihood options, health, socio-cultural identity, daily routine and social relations (Mehta, 2006).

The capability approach helps to qualitatively evaluate the well-being of the disadvantaged and marginalised communities based on their capabilities and freedom rather than evaluating the aggregate benefits from the water resources. Therefore, the capability approach can help evaluate the varied impacts of socio-political process on diverse groups of people, recognize the diverse needs and competing values of the Water user associations (WUAs).

5. Findings and Discussion

5.1. How gender intersect with social and bio-physical factors and shape capabilities to access water resources?

Water security is a broad term. It defines adequacy, quality and reliability (Jepson et al. 2017). Adequate, clean and reliable access to water is important for human survival and well-being. Water access however, is not only determined by biophysical factors such as the topography, geology and distance from the water sources but also by social-economic attributes of individuals, households and the community.

Social hierarchies in all the studied areas were evident not only through widely practised caste system but also from different land size holdings and the varied capabilities of the households to diversify livelihood strategies. In hamlets, especially heterogeneous in terms of traditional caste structure, caste has an important bearing on the capabilities of men and women with regard to access to water. These villages practice separate springs for Dalit and non-Dalit. Ironically, similar water arrangement practices are also prevalent in hamlets most intervened by development organisations. In a hamlet called Saudnara for instance, Nepal Water for Health project (NEWAH) has built 9 taps. As informed, water flow in these taps interrupts very frequently due to blockage at the source. In such circumstances, people rely on nearby located water springs which are separate for Dalit and non-Dalit. The conversation below exemplifies how water access is still marked by caste differentiation in the hamlets.

Box 1 A Dalit girl asks researchers' caste.

The water in the tap was interrupted for the last three days. Men had gone to the source to remove the obstructions. A young girl was fetching water from one of the two spring taps nearby.

R – Can I drink water from this tap? (Pointing the tap the girl was using)

The girl – Where do you belong? (Dalit/Non-Dalit)

R – I belong same as you.

The girl – Stares!

With given gender roles, women and young girls bear the burden of water collection mostly. The water stress increases if these women are economically poor and have a migrant husband. In Saudnara, most Dalit women who were interviewed had a migrant husband. With given time constraint, it was difficult for the research team to understand the complete water arrangement impacted by caste dynamics in Saudnara, especially when there were plenty of water interventions by different organisations to ease the access to water. In the group discussion, women stated that there are two different sources of water for these 9 taps. Further research investigating the source location, and the reliable flow of water is important. It is because the water flow interrupts almost every week and available men who are only high caste go and mend the source, and if the source is different for different groups, women with migrant husbands face more constraint to reliable water access than women with husbands in the village or who have strong kinship ties with men relatives.

We observed similar water arrangements in another hamlet called Rokainaragaon, the farthest located hamlet from the market area, with fewer interventions with regard to water infrastructure. Interestingly, unlike Saudnara the spring sources were located not at a similar height. The water source used by Dalit was at a lower elevation than that of Chettris. These sources, as informed, are the traditional water sources used by the people for generations. Evidently, the caste system demarcated the clean water to Chettris and water which gets polluted due to laundry/bath at higher elevation water source was given to Dalit. Furthermore, the water source used by Chettri has better flow than that is used by Dalit.. The system is still intact. Similar water arrangement based on caste was also heard from other hamlets in Mellekh.

Traditionally, women are responsible to fulfil domestic water needs. It is basically children, young woman and daughter-in-law who are responsible for fetching water for cooking, vegetable farm, livestock, bathing, and sanitation.. In this sense, women, not men needs strength, time and face water conflicts (if any) with regard to water collection. A young pregnant woman from Saudnara added –

“I also carry water 4-5 times a day even if it is hard, I do it”. (Source: Female, Focus Group Discussion in Doti, 2017)

Women in Katalgaon and Alaitwada reported collecting water a maximum of 14-20 times a day. It was stated that since all women collect water after finishing household and farm activities, the queue is usually long and each wait for their turn. In Alaitwada, we observed that the tap is constructed near a temple, which as informed by the women later, is why women do not clean themselves at the tap but carry water to the house and bath there. Access to water for women also differs while they menstruate. It was shared most of the women go to the river stream to clean themselves. The continuous and rapid flow of water makes it easy for them to wash stained clothes without any embarrassment Traditional mensuration taboo considers female impure and prohibits them from touching water sources. Even to mention mensuration or visibility of blood becomes a source of embarrassment and considered unclean. This shows how historically culture have played major role in maintaining and reinforcing gender inequalities with regard to equal access to water resources.

“We collect drinking water only. We don't do laundry here. We don't bathe. We carry water and do washing in the house. There is a temple, so we don't do it here. For washing clothes, we go to the khola. We also take livestock there”. (Source: Female, Focus Group Discussion in Doti, 2017)

When we compare the access of women to water based on caste, Dalit women retain the disadvantaged position. It is because they do not have access to clean water and also they have to devote long hours due to less flow in the spring. The problem becomes intense during the dry season, when the flow is reduced extremely. In terms of hamlets, as stated before, Saudnara appears to have maximum water infrastructure. We observed young educated men in the villages who are involved with government and non-governmental job. They are also well connected to their kin settled in the market areas. We assume that this could be one reason for greater access to institutions for funding for water infrastructures. Furthermore, the household with higher resources have moved to the market area and have easy access to water through pipes.

Access to clean water is also a problem for some hamlets because of the open source of water. For instance, women in Saingoan reported that since there is no tap and the source is open, children often put their hands in the water which makes the water dirty. They use utensils to collect water from the source. Unequal, unsafe and inadequate water access negatively affects women's health, work burden and

therefore, capabilities. Women lack entitlement to safe water because of cultural norms, social exclusion and lack of water infrastructure as well (Mehta 2014).

Access to irrigation water, in the studied hamlets, is not as simple as it appears on the ground. In normal terms, we heard explanations such as - we irrigate our fields on mutual decisions; we face minor verbal disputes but we solve it soon among ourselves. Gathered data shows that access is largely defined by land size, land location, land quality, labour availability, water infrastructure, resources to buy pipes, seeds, fertilisers on time, good social networks and access to water stakeholders.. Land distribution in terms of quality and quantity is shaped by history. Consequently, the bigger chunks of lands with good soil productivity and water access is owned by comparatively well-off groups in the village. The table below details the physical and social factors that determine inequities in terms of access to irrigation water.

Table 1: *Bio-physical and social factors determines unequal access to water resources*

Determinants of Access	Non-Marginalised Group	Marginalised Group
Land ownership and Size	Big	Small/landless
Land Quality	Khet (Irrigated lands)	Pakho (Steep rain fed lands)
Land Location	Near Water Source	Far from water source /Vulnerable to monsoon landslides
Labour Availability	Men are involved in government or NGO jobs, men return back during farming season, hire or exchange labour	Usually a migrant to India, returns back only after 2-3 years, women rely on village men for ploughing, exchange labour in the village.
Water Infrastructure	Ponds	No access to pond water
Resource Availability	Pipes, Seeds, Fertilisers, pumps, bullocks	Seeds, Fertilisers
Social Networks	Extended	Limited
Access to Institutions/Water stakeholders	Men	Women

(Source: Fieldwork, 2017)

In all the studied areas, technically, the one who sows gets the chance to irrigate the fields. Marginalised households without men, lack labour, equipment and resources to sow fields before the one who owns resources and labour.

“We are mostly dependent on rainwater. If there is a lot of rain, we get water from the canal. At that time, 4-5 people can plant on the same day. If my field is ready, then I take

water. I might be first or last, it does not matter when there is a lot of water. If there is less water, we have to take turn. The ones nearer to the canal are the first ones and the ones at the end receive water last". (Source: Female, Focus Group Discussion in Doti, 2017)

In some cases, it was also found that people do not get water to irrigate the fields even if they manage to sow the fields on time. In case of Punetola, those who have pipes and irrigation ponds have easier access to water than those who do not have means to buy pipes.

"Few ponds are supported by the organisation but the landowners made it private. We have to ask the owner of the land to use the water". (Source: Focus Group Discussion in Doti, 2017)

Labour availability is important not only in terms of preparing the fields sooner but also in communal activities that includes repair and maintenance of the canals during the planting season. Repair and maintenance is traditionally seen as a masculine activity, therefore limit women culturally from participating in it. Moreover, if they don't do it, they risk losing right to access water to irrigate their fields. Social networks also play role in determining individual access to water resources and infrastructure. Since water sector is run especially by men, it is men in the village who access information about projects and play role in decision making with regard to location and benefit from water infrastructure, trainings and other relevant information on extension services. With unpredictable and changed weather patterns the tensions around irrigation becomes rife during dry season, when water flow decreases substantially in springs and streams. Without required resources and men at home, women may suffer crop loss as shared by many in both Doti and Kailali.

"The water source is dry, except in rainy season. The water in the stream has reduced. It rise only during rainfall. Rainfall was good in old days. It would rain the whole day and we would do plantation". (Source: Female, Focus Group Discussion in Doti, 2017)

Similarly, in a hamlet in Kailali a widow with migrant sons shared how this year she could not irrigate 10 kathas of land because there was no one to help her to carry the engine to her fields, located in the elevated lands near the Mohana River. Her crops were destroyed. In another hamlet, another woman with a migrant husband stated, "It is difficult to arrange everything. I was busy arranging the 'dunlop' (the cart) all morning, now I need to arrange bullocks and then I have to worry about getting a man to drive the cart and plough the fields. To get things done is not straightforward. We have to request several people, several times." Lack of access to water and destruction of harvest can translate into losses for instance, more debt, circular migration, cut offs in nutrition, less money to invest in next season farming, and greater vulnerabilities.

5.2. Gender, social capital and water resource management

5.2.1. Social networks

In the study sites, well-being is shaped by household capabilities to diversify sources of livelihood which in turn is determined by gender, class, caste, and age (GCCA). Among affluent households are primarily high caste (Chettri in Doti and Tharu in Kailali), with local jobs (teachers, army, police, NGO), hold an important leadership role in the community combined with local business (renting cars, hotels, shops), literate and men. The most common characteristics of such households in all three sites is the strong social ties that men share with men both inside and outside the village. Men share the privileged position as water managers and access the associated opportunities (job), training, information and meeting

since water management is typically seen as men's work both inside the village and in the organisations working in the water sector. We came across no female staff working at the sites. The absence of female staffs in the fields discourage women in the village to expand social networks. First, men usually contact men and not women and second, contact with men bring tag of an immoral image to women. Similar instances have also been reported by previous studies, for example, Ireland and Thomalla (2011) provide an example of male government staff refusing to meet women unless accompanied by men and how male local government employee reported the loss of his social status by interacting with women collective. These social norms act detrimental to the development of women's capabilities.

In addition, influential men in the village act as links for further contacts for the development actors and recommend men (women only when there is a compulsory criteria) in close contacts (basically sharing kinship) for jobs, position in user committees, meetings or training. This chain of benefit from individual social networks, benefit one single group and carry a risk of aggravating social and gender inequalities. The gathered data reveals that a strong social connection depends on common ethnicity people share in the village. For instance, Chettris have close social bonding with Chettis than with Dalits. This finding was similar in case of Kailali. For instance, Tharus share a strong social bond with Tharus and strongly disassociate themselves from Madhesi and Pahadis. Since Chettri is high in caste hierarchy than Dalit, in the hills Dalit was underprivileged. In the case below, a Dalit woman was boycotted and lost membership in social groups because a boy from her family married a Chettri girl.

Box 2 CASE: Common ethnicity counts for building social capital

A Dalit woman with a migrant husband was found not a member of any community group. When asked about the reason she seemed very reluctant. After several minutes of probing she shared that since her elder sister in law's son married a Chettri girl, everyone in the village boycotted her family. Her elder sister-in-law family were ostracized from the village. She faced fights in groups she was a member of. So, she left. She is not a member of any community group including women's saving and community forestry groups. She is forced to live an isolated life.

Engagement in community-level organisations increases trust and provides access to resources, income and improved well-being. However, in this example the Dalit woman lost the only means to build on informal networks provided her exclusion from women saving groups, which as we found to act as an important base of women's social capital in the villages. All other community groups are managed by men including forest groups. Women, in particular of households with no men or women with migrant husbands lack social networks because of less frequency of contacts with the outsiders. Men on the other hand responsible as bread earners are mobile and earn an opportunity to build wider relations with outside and inside actors. In such a context, women's capabilities to access water is often conditioned by their relations with male relatives (Movik 2012).

Research indicates an absence of social capital acting as an obstacle in management and development of collective commons. For instance, Bisung et al. (2014), explores the relationship between social capital and participation in collective action in the context of addressing water and sanitation issues in Western Kenya and finds that the lack of social capital is a barrier to collective action for community-based water and sanitation initiatives. In the context of Nepal, Lam (1999) compared 150 government and farmer managed irrigation systems and found that their success depended heavily on the social relations between farmers receiving water from the system. Similar to these studies, women's weak social capital in the research areas was found critical for women's non-participation in the collective management of water resources, thus severely limiting their capabilities to improved well-being.

5.2.2. Trust

Trust is integral to good social relations and cohesive societies. Cooperation can flourish when people trust each other (Uslaner 2002). Trust promotes participation and affiliation and therefore can affect capabilities (Murphy-Graham and Lample 2014). According to Nussbaum (2011) affiliation denotes an ability to live with and toward others, to recognise and show concern for other human beings, and to be able to engage in various forms of social interaction. It also means self-respect and non-humiliation, the ability to be treated as equal and dignified being. In all the study areas, gathered data indicates lack of trust among community members and in particular with community leaders.

“We have some leaders. A few years back they said they will convert this hamlet into a colony (everyone laughs)”. (Source: Male, Focus Group Discussion in Doti, 2017)

When men and women do not trust leaders or mistrust each other, they are less likely to participate in committees. This could lead to weak law enforcement as could be seen in case of stealing of forest products or the existing forest conflicts between different hamlets in Doti. Similar evidence have also been provided from Uganda by Naiga and Penker (2014) where lack of trust caused reluctance from users to contribute to water user fees. Less participation also means no voice in decisions which impact the bodily health of men and women and therefore can impact their capabilities. The Dalit woman who was ostracised by the community, for example, lost all her group affiliations which reduced her access to forest products. She doesn't pay for the forest products but steals from the forest to meet her firewood necessities and also this has forced her to live in continuous fear of being caught. Similarly, no participation and no voice due to mistrust reduce capabilities of women for they could not access information and opportunities from water management projects.

Q. From which organisation?

We don't know

Q. Why did not you get it?

In other villages, there are people who can speak, go and ask. Here, those who could speak migrated to Kathmandu. The remaining men just sit under the pipal tree. What can women do?

“If things come in the woman's name, then we will get it, but it comes in the men's name”.
(Source: Female, Focus Group Discussion in Doti, 2017)

As could be inferred from the interview excerpts, trust on each other, trust in women's capabilities and self-trust by women themselves is important for effective women's participation and sustainable management of WUAs. It was found that trust and good leadership are two important factors that enable collective action. A hamlet in Kuti presents an example of well-managed water governance. The hamlet is inhabited by Tharus. The role of village head is prominent in big decisions. He is respected and followed by everyone in the village. Similar kinship has also kept the bond strong among the community members. Besides, there are leaders not in formal positions however with strong social networks who are working for the betterment of the community for example access to budget from District Development Committee to build stone-paved road, which would cause trouble of access during flood before.

“The front road was made gravelled from MP fund. Mr Chaudhary is from Madheshi Forum. When they came for a survey, I had told him about the flood situation and the need for embankment”. (Source: Male, Focus Group Discussion in Kailali, 2017)

With regard to irrigation water distribution, the rule is to charge the user a certain amount for using the borewell water and the machine. The user also needs to bear the cost of diesel in addition. However, the rule is different for those living within the hamlet. Borewell owners do not charge the user for water and machine. The user only buys the fuel. Again if the user is a relative then he/she only prepares snacks for everyone.

“Within our hamlet, we usually do not charge for using borewell. The users bring their fuel. Before, it was charged Nrs.35/hour for the engine. However, we never charge our neighbours. Sharing water is a goodwill.” (Source: Male, Focus Group Discussion in Kailali, 2017)

In other hamlets, although lesser amount, when compared to the outsiders, the user from the hamlet, is charged both for the machine, and the fuel. Social capital as such reduces the cost of irrigation for the users who do not own borewell. Nevertheless, in other hamlets, users without private borewell bear the higher cost of irrigation because they pay for engine, pipe and fuel as well.

“We also rent from other hamlets. Sometimes we pump water from far distances using pipes. We are charged Nrs100/ hour. We need to bring fuel and pipe. Some people charge Nrs80 for using motor”. (Source: Female, Focus Group Discussion in Kailali, 2017)

Good leaders play a critical role in facilitating collective action within the communities. In the stated hamlet, strong social capital and collective action are also evident from well-maintained common borewell which was provided by the government. As informed, the cost of machine and electricity meter installation was paid from the contribution from the users and they also share the cost of repair and maintenance among themselves. The installation of motor and meter became possible due to collective demand and leadership in the community.

An effective collective governance of the water resources requires good trust among the community members. Accountable leadership is missing in case of Doti which has created mistrust and weak collective social capital in the village. Unlike the hamlet of Kuti, both sites in Doti and remaining hamlets in Kailali reveal leadership void that has been created by the decade-long conflict, socio-economic differences and increasing men's migration as well. The negative impact is visible through the ineffective water and forest resource management at the sites. Traditionally men held leadership positions as village head or political leaders. With increasing men's migration women are left behind who traditionally were excluded from leadership positions and lack capacity and social status to be accepted as leaders by the community. The existing leadership in the village is defined as individualistic and corrupt by the community members which provide fewer incentives to men and women to contribute to the maintenance of water and forest collectives.

5.2.3. Institutions

The problem is aggravated by development interventions which, despite having good intentions, have created unintentional unequal ownership and access to water resources. Inclusive participation and gender equality have become integral buzzwords to organisations, nevertheless, there are less structural changes that define control and benefit from water resource management. The formal-informal rules and norms for the selection of individuals for important positions include those who could keep records, carry good hold in Nepali language (observation), is mobile and can spend time for meetings and discussions. Women both in Doti and Kuti are not educated, not versed in the Nepali language, less mobile, and busy

with triple burden of work. In such a context, women are selected as members of the committee and with no time and budget devoted by the projects to build their capabilities, remain passive participants. These formal rules and norms support powerful groups' interests, rather than those of the weak and marginalised (Mehta 2014). This could be seen from the increasing privatisation of water sources and infrastructure in Doti, which the poor and marginalised women cannot access. Even the compulsory women quota has not succeeded to bring women in the committees. In Kuti for example, none of the women irrigators is members of the user group. Women who are in the group are close relatives of influential men in the village and do not irrigate fields themselves. Evidently, such water management arrangements have pushed marginalised women to vulnerable situations in terms of equal water access.

“One pond belongs to Mr. K. If we ask, he would give us water but we have not asked because it is his personal pond. What about the pond in Punetola? – They don't provide us with water. It is sufficient for only Punetola. It was brought by an organisation. I do not know if the pond is leaking”. (Source: Female, Focus Group Discussion in Doti, 2017)

Studies indicate that often the community contribution in infrastructure development becomes possible not because of social trust however due to NGOs/ the government who pay the community to construct the infrastructure (Bouma, Bulte and Van Soest 2008). Such cases usually reduce the collective incentives for the community to contribute. Our observations reflect similar findings as that of Ostrom (1994) which argue that ignoring the role of social capital and collective management of water resources by development organisations might have unwanted consequences as that could be seen in Mellekh and Punetola in the form of leaking and abandoned ponds or communal ponds turning into private ponds. Creating water infrastructure such as common ponds, taps and canals are popular among development organisations to encourage community management of watersheds and water systems. However, the sustainability of an externally induced collective project, not considering the social context, is increasingly debated (Adhikari and Goldey 2010, Lam 1996, Lam 1999, Lam and Ostrom 2010). Lam (1996), for instance, in Nepal showed that infrastructure interventions can erode the need for collective action and consequently fail to achieve the expected results. In all study sites, there are informal institutions managing irrigation water. However, as stated elsewhere women's access is not only determined by caste and class but also largely depends on women's relations with men relatives.

6. Conclusions

This study found that both biophysical and socio-economic aspects are influential in shaping access to water resources. However, most of the times it is the poor and the marginalised who suffer owing to the least means, networks, capabilities to better adapt to adverse circumstances. This study confirms findings from previous studies (Das and Hatzfeldt 2017) that gender norms are key to shaping water inequities at various intersections such as caste, class, age, disability, location and so on. The increasing norm of seasonal migration of men from the rural villages has added more to adversities especially for the left behind women from poor households who are responsible for triple nature of work. Not only women's work burden increases but migration defines women's dependency on other men for activities socially defined as masculine, and also to information and opportunities. We posit that migration does not necessarily prove positive to all but can have differential impacts on different women. In all the sites, women play nil or minimum role in decisions related to water management. Women's access to water is defined by their relation to men relatives.

Equitable water resource management requires not only an equal access to use the resource but also

the capabilities, trust and good relations to sustain it effectively in the longer run. We agree to Migheli (2011) and argue mutual interlinkages between social capital and capabilities. Social capital enhances new capabilities, which in turn creates new connections, access and networks which again allow individuals to attain new capabilities and functioning. However, since men and women share gendered spaces, linkages and resources to build social capital, women lack capabilities to contribute effectively to sustainable water resource management. Gender intersects with class, caste and other social differences determine ownership and mobilisation of capitals – physical, social, natural and human. Ownership and mobilisation of these capitals build individual capabilities and determines in turn access to resources (water, land, forest), infrastructures, opportunities (knowledge, skills, income, health) and institutions. The new capabilities again create newer capabilities and enhanced access to resources and opportunities.

In the study areas, gender relations not only determine the ownership of water sources equipment and infrastructure but also influence the location of water infrastructure to be constructed, leadership choice in key positions and income opportunities from water projects. This has a negative impact on marginalised women's capabilities and functioning. We argue that the existing configurations for water governance (re)produce gender and social inequalities. It is because of the following:

- 1) Despite increasing gender mainstreaming efforts, women are either not involved in local water governance or are involved without required capabilities to influence decision making. No interventions have been proposed to address power relations arising of GCCA in the group. Women, in most cases, hold treasurer post and influential men in the villages chair different important groups, which keep the gender belief intact that men are good at decision making and women are good at safeguarding the fund, however, hold no power or role in spending it. The relation of masculine and feminine traits to water governance remains intact. Men get involved in high earning activities such as supervision, tender, breaking stones and constructing irrigation ponds while women carry stones and earn less than men.
- 2) On one hand, if migration is considered as an important risk reduction strategy for the households, on the other hand, migration of men from the poor household has increased water insecurities for the left behind women. It is because, the maintenance and repair of the water source is still seen as men's job, that needs long hours walk to the source and physical strength to repair the damages. Households without men which cannot participate in the repair and maintenance work face constraints to reliable water access.
- 3) We find that migration of men from the most marginalised groups does not necessarily empower voiceless women in the local water decision making. There is a possibility that this may further marginalise them in terms of access to information and opportunities because influential men who do not migrate still act as gatekeepers to important information, training and development projects, therefore, give preference to women of their choice. This may increase disadvantaged women's struggle for well-being in the absence of proper social networks and result in no change in individual and household well-being.
- 4) The varied development interventions for increased access to water in the communities is praiseworthy, however, our observations indicate that such development interventions usually ignore the social and cultural complexities that shape an individual access to water resources. Social and economic inequalities are further aggravated by the development organisations which practically provide less attention to the GCCA differentiation and more effort is made to overcome the technical obstacle in the building of water infrastructures. This could be seen from

the delegation of leadership positions to influential persons (mostly businessmen, politicians or job holders), preference to individuals good at record keeping, speech making (good hold on the Nepali language) and with spare time. The adverse impact of this could be seen from the location of water infrastructures and also the unsustainable investment in water infrastructures evident in the form of leaking and abandoned ponds. In addition, there has been little done to strengthen the trust and work on collective commons. We presented examples of the cases where communal ponds are claimed as private and therefore limit water access to the poor households. Also, we found cases where water committee collapses as soon as the project ends.

7. Recommendations

Based on this study, we make the following policy recommendations:

- Policy on GCCA should go beyond 33% representation of women in WUAs and focus on how to build capabilities of women and the marginalised so that they can contribute effectively to collective water governance.
- Apportion time and budget to build skills and capacities of the marginalised groups to bring them to the leadership positions.
- Appoint female project staffs (technical and non-technical) so that women are comfortable to ask questions, access information and skills, take leadership positions and contribute better to sustainable water resource management.
- Encourage or create incentives for the staffs to consider GCCA while planning, implementation and monitoring. This is important to break the gate of influential gatekeepers who control major decisions in the villages.
- It is important to address intra-household gender relations. Young married women although literate and have the capacity to effectively contribute to the local water governance do not receive the opportunity because of gendered expectations of taking care of household affairs, bearing children and taking care of old and young. In the absence of proper support from the projects, it is difficult for a single voiceless woman with a migrant husband and young children to be part of the decision-making process.
- Finally, policies/activities should create an environment that enhances collective action through increased trust and social well-being in the community.

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