Breaking down Barriers: Gender and Disability in Access to Agricultural Water Management in Nepal

Otto Max Hoffmann
Development Researcher, MetaMeta, The Netherlands
Email: otto.hoffmann12@yahoo.com

Saroj Yakami
Researcher, MetaMeta, Nepal
Email: syakami@metameta.nl

Dr. Shiva Chandra Dhakal
Assistant Professor, Agriculture and Forestry University (AFU), Nepal
Email: nepal_dhakal@ymail.com

Abstract
A huge gap persists in studies and development work in examining the intersection between gender and disability in the field of agriculture and water management. Meantime, feminist and physical disability literature (studies about physical disabilities) as well as analyses between the two have contributed to further insights; however, these have failed to integrate dimensions of agricultural water management to improve gender balanced and disability friendly programmes for Nepal’s agriculture dependent population. This paper examines the challenges faced by persons with disabilities due to leprosy and by marginalised women in accessing water for agriculture, by focusing on the way in which gender and disability intersect, the combined influence they have on access to water for agriculture, and the extent to which improved access to water for agriculture leads to improved gender and disability inclusion. Data collection was done through primary research methods and techniques. The results of the research show that the barriers that women and persons with disabilities encounter in agriculture and water management intersect at the point of exclusion. In terms of the social, for both women and persons with disabilities, there is a stigma; and in terms of developmental exclusion, government and development agents either entirely neglect these vulnerable groups or are incapacitated to appropriately address and facilitate change. Decision-making and participation in agriculture and water management depend on several drivers such as, the distribution of authority and responsibilities, ownership of land and access to water, and participating in irrigation. This study argues that access to information and participation is paramount for the inclusion of vulnerable groups in rural areas of Nepal in the social, environmental (physical), and institutional dimensions and can reduce stigma and neglect.

Keywords: Physical disability, Gender, Water access, Agriculture, Nepal

Introduction
The Universal Declaration of Human Rights was adopted in 1948 to underline that all persons are born free and equal in dignity and rights. Yet, everyday experiences tell a different story (Gostin and Gable, 2004). The fact that certain vulnerable groups launched their own conventions to protect their rights, underscores the fact that not every person’s rights and dignity are respected equally. The United Nations Convention on the Rights of Persons with Disability (UNCRPD) and the United Nations Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) are examples of conventions that should protect, respectively, the rights of people with disabilities and women (UN, 2009; NFD-N, 2015). Evidently then specific vulnerable groups require specific attention in the protection of their rights.

Similar to other vulnerable groups, people with disabilities and women are often excluded from
mainstream social, economic, and cultural development initiatives (Barnes and Mercer, 2005; Foley and Chowdhury, 2007). In a competitive market for scarce resources, the most vulnerable people are often first to be excluded from services, facilities, information, and other types of resources. In countries highly dependent on agriculture, such as Nepal, these people are also hindered in their access to water, land, markets, and essential information about agricultural and water management practices. Mainstream development workers, NGOs, and other actors, such as the community and the government involved in the agriculture and water sector rarely research and include tools that benefit vulnerable groups, for example, build knowledge regarding disability or about health conditions causing impairment such as leprosy. Stigma and cultural beliefs result in exclusion from participation in different domains of life. As a result, vulnerable groups are rarely included in development programmes, the persons with disabilities being particularly excluded (Bruijn et al., 2012). However, with regard to gender, since a decade or so donors have focused on including gender in all programmes. The question is how effective has this inclusion of gender been and how has this focus in development programmes worked out. Moreover, lack of political commitment and research has made vulnerable groups low priority on the government's plans and policies. Not only do these social and institutional barriers exclude people from access to water, but physical barriers may also be problematic, especially for those who have difficulty moving or using their hands, those who cannot read, or those who cannot perform heavy labour.

Although Nepal is endowed with significant water resources, access to water remains challenging for many people (vulnerable and non-vulnerable), due to the large variations in geology, topography, and precipitation patterns. In most areas of Nepal, the rains are concentrated within a period of three to four months per year. The need for water buffering or water conservation practices, which can ensure a sustained supply for most of the year, is therefore, a crucial aspect of sustainable (agricultural) water management. The development of water buffers demands investment in land, water, and vegetative cover (Steenbergen et al., 2011). A central concept is the approach called 3R (Recharge, Retention and Reuse), which "explores how to maximise the use of groundwater and rain water for development and climate change adaptation" (Steenbergen and Tuinhof, 2010, pg. 2) – a collection of all the techniques and management options to ensure proper buffer management. Also, because land ownership is an increasingly challenging factor, water buffering enables people to have access to water close to their homesteads, which helps, for instance, in cultivating high-value crops on limited small parcels of land. In addition, increased migration (especially of young men to the cities and the Middle East) causes a decline in the size of households, which increases pressure on those who stay behind making them even more vulnerable. The ones who stay behind are often women, elderly, sick people, or people with disabilities and as they struggle to work in their fields they eventually fall deeper into poverty (Cornielje et al., 2015). Moreover, research by Zwartveen (1997) describes that the allocation of water rights is not equal between men and women, and in South Asia generally, female participation is low in water user associations due to the formal and informal membership criteria that ignore women (Meinzen-Dick and Zwartveen, 1998).

If people in Nepal are able to produce better quality, quantity, and high-value crops, this will have a positive impact on their income, nutrition, and health. Improved access to water for agriculture may lead to better wellbeing and is likely to increase the status of people, which ultimately may foster more social inclusion (Ebenso et al., 2007; CA, 2007). For this to happen, it will be necessary to identify and define strategies to break down social, physical, and institutional barriers in agricultural water management. The aim of this paper is to explore the differences and similarities between gender and disability-related challenges to accessing water for agriculture. By understanding the challenges, we may be able to 'break down barriers' that prevent people from leading a dignified life and obstruct an important source of income in Nepal. This study¹ may also help to understand barriers that other vulnerable groups encounter, such as ethnic and

---

¹ This paper is a part of two years research project on better access of water in agriculture for the well being and inclusion of people with physical disabilities and their families, which includes implementing several 3R techniques in the Terai and mid-hills areas of Gorkha and Morang district, financed by Leprosy Research Initiative and Netherlands Organisation for Scientific Research.
religious minorities and elderly. The article aims to answer the following questions: what are the challenges faced by people with physical disabilities and marginalised women in accessing water for agriculture? In what way do these challenges for people with physical disabilities and for marginalised women intersect and what is their combined impact/influence on access to water for agriculture? To what extent will improved access to water for agriculture lead to improved gender and disability inclusion?

**Theoretical framework**

The World Health Organisation (WHO) defines disability, according to the framework of the International Classification of Functioning (ICF), as the umbrella term for impairments, activity limitations and participation restrictions. Key to the ICF definition is the understanding that disability results from the interaction between a person with an impairment and the society. Disability is not so much an attribute of the person, but rather a result of discriminatory and exclusionary environments (WHO, 2011). A person with a visual impairment would, for example, hardly experience his or her disability when society would be completely adapted and inclusive towards people with visual impairments. The fact that communication is not offered in Braille, that traffic lights do not use sounds, and that people may treat this person with pity, causes the actual disability. In this study, we use the same definition of disability, but focus specifically on people with physical disabilities who are willing to perform agricultural labour.

The United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) is a legal instrument protecting the rights of people with disabilities (UN, 2015). The government of Nepal ratified both this convention and the optional protocol on 7 May 2010 (NFD-N, 2015). This obliges the government to respect and enable certain rights (see box 1).

The UNCRPD justifies our search to understand and seek strategies to improve access to water for agriculture in many respects.

Across the globe men and women are assigned different tasks, rights, advantages and opportunities in the activities they do, in order to gain control over decision-making proceedings and resources (Social Watch, 2012). The Gender Equity Index (2012) report published by the Social Watch points out that worldwide, women are trying to achieve equity in

---

**Article 9 – Accessibility:** the state shall take appropriate measures to enable people with disabilities to live independently and participate fully in all aspects of life, through ensuring access to services and facilities, including information and communication. This requires identification and elimination of barriers and obstacles.

**Article 19 – Living independently and being included in the community:** the state recognises the right to live in the community, to full inclusion, and to participation in the community. Specifically, community services and facilities are available on an equal basis to all.

**Article 27 – Work and employment:** the state recognises the right of people with disabilities to work on an equal basis with others, including an inclusive and accessible work environment. People with disabilities have the right to access general technical and vocational guidance programmes and continuing training, and states shall promote their opportunities for self-employment.

**Article 28 – Adequate standard of living and social protection:** the state recognises the right to an adequate standard of living, which includes the continuous improvement of living conditions, equal access to clean water services, access to appropriate and affordable services and assistive devices, and access to social protection programmes and poverty reduction programmes.

**Source:** NFD-N, 2015

**Box 1:** Actions required to enable disability rights in the UNCRPD 2010, Nepal
education, and economic and political empowerment as they do not get a fair share (ibid). Signifying that the gender gap needs more dedicated attention, practicable alternative approaches to attain equity are needed. Also, according to the African Development Bank (AfDB) current research and practice suggests that “well-designed, appropriately located and affordably priced infrastructure can be a powerful tool to accomplish gender equality” (AfDB, 2009). The gender gap in South Asia scores 0.39 of 1.00, and in the case of Nepal, the score is 0.47 (Social Watch, 2012). While this may seem promising, both scores are below the global average 0.56 (ibid). According to Social Watch (2012), adequate policies can potentially reduce gender disparities regardless of a country’s income level. Drawing from this, it is essential to encourage inclusive and participatory approaches, as these are basic rights for gender equity. Those rights are expressed in different forms in various instruments. The United Nations CEDAW is an example of such an instrument (UN, 2009). The following articles (see box 2) in the convention are of specific interest. Conceptualising equity from a broader perspective, Sen (1995) reasons that equity cannot merely be measured conforming to the distribution of primary goods or income. It generally involves a combination of drivers of overall wellbeing. Therefore, an equal distribution of resources in itself does not inevitably guarantee equity, and the physical presence of women in institutions also does not imply that their actual needs are scrutinised or voices are being fully heard. From an equity perspective, a relevant matter is whether people have the capability to use the resources. Therefore, development interventions focusing on agricultural water management, gender and/or disability, aiming to achieve equity, need to be specific in their interventions to people’s different capabilities, and control over resources.

We do not only aim for equal distribution of resources for agricultural water management but, in fact, aim to study how removing barriers may result in improved inclusion as well as wellbeing. Our hypothesis is that improving physical, social, and institutional access to water for agriculture will lead to better inclusion and wellbeing of vulnerable and marginalised populations. Inclusion and wellbeing are generally understood in either objective or subjective concepts (Cough and McGregor, 2007). While there are many arguments for why a subjective approach may do more justice to the populations we study, here we choose to use objective measures of both inclusion and wellbeing for the purpose of statistical comparison between 'vulnerable' and 'non-vulnerable' groups.

Bruinj et al. (2012) outlined three types of barriers that women, people with disabilities, and other vulnerable groups encounter in their everyday experiences - social (or attitudinal), environmental (or physical), and institutional barriers. Social

| Article 3 – States Parties shall take in all fields, in particular in the political, social, economic and cultural fields, all appropriate measures, including legislation, to ensure the full development and advancement of women, for the purpose of guaranteeing them the exercise and enjoyment of human rights and fundamental freedoms on a basis of equality with men. |
| Article 11 – States Parties shall take all appropriate measures to eliminate discrimination against women in the field of employment in order to ensure, on a basis of equality of men and women, the same rights. |
| Article 14 – States Parties shall take into account the particular problems faced by rural women and the significant roles which rural women play in the economic survival of their families, including their work in the non-monetized sectors of the economy, and shall take all appropriate measures to ensure the application of the provisions of the present Convention to women in rural areas. States Parties shall take all appropriate measures to eliminate discrimination against women in rural areas in order to ensure, on a basis of equality of men and women that they participate in and benefit from rural development. |

Box 2: Actions required to enable women rights in the CEDAW 1979

Source: UN, 2009
barriers occur when people are excluded because of prejudice, shame, and discrimination from either society or from a person. People with disabilities are often thought of as incapable, contagious, or cursed. Women may not be allowed to do 'men's work' or may be treated as inferior to men. Physical barriers are often most easy to detect; nevertheless there may be an unwillingness or unawareness among people to recognize the physical barriers. Poor roads, steps, and inaccessible information for people with visual or hearing impairments are examples of this. Women may find it difficult to use heavy machinery for agriculture or to perform heavy labour, such as ploughing the land. Institutional barriers hamper participation through discriminatory laws, lack of government support, or neglect by development organisations. While we may be able to distinguish the various barriers that prevent inclusion of vulnerable populations, it should be noted that one type of barrier generally interacts and exacerbates another barrier. For example, women may not have access to essential information/knowledge about irrigation, water distribution, repair and maintenance (environmental barrier/institutional) because governments do not promote literacy programmes for women (institutional barriers), as society does not acknowledge the need to educate women (social barrier).

Figure 1 visualises how we will identify and discuss gender-specific, disability-specific, and overlapping challenges in agricultural water management in Nepal.

**Methodology**

According to the World Fact Book, 83 percent (FAOSTAT, 2010) of the Nepalese population lives in rural areas, of which 68 percent are involved in the agricultural sector (USAID, 2016). The two study locations, Gorkha (Mid-hills) and Morang ('Terai'² – plains) district were selected on the assumption that the issues in terms of access to water and water management may vary as per topographic region. For comparative reasons and verification of (3R) water harvesting technique in different agro-ecological zones, a district from the mid-hills and Terai plains were selected. According to the Government of Nepal (GoN) Department of Health Service (2013), Gorkha and Morang district have a high leprosy case detection rate in the country, accounting for 0.49 and 2.20 per 10,000 people, respectively (GoN, 2013). The study focused specifically on people with physical disabilities due to leprosy, as leprosy is still a highly stigmatised condition.

The research used two types of data collection methods: primary and secondary data. Primary data was collected using quantitative and qualitative methods, and secondary data was collected from documents and reports from various government and non-government offices in the districts and of publications of various organisations working in the

---

² It is a lowland region that lies in the southern part of Nepal. It extends from the foot hills of Siwalik range up to the border of India
field. For the primary data collection, we used a mix of quantitative and qualitative methods to establish a baseline to determine how to approach the situation for the targeted communities in the two locations: Gorkha and Morang district. Two Village Development Committees (VDCs) from each district were selected, each containing approximately 20,000 people. The selection of VDCs (Chhoprak and Gorkha municipality) in Gorkha and (Pathari-Sanischare and Urlabari) in Morang was based on meetings with the district health office departments, the regional agricultural office department and several other relevant NGOs working with disability and leprosy in the research areas. The sample selection of the research included households with people with physical disabilities (including physical disability due to leprosy) and households with people without any disability. A sampling frame list of households, including people with disabilities was developed focussing on the least and medium level affected people. The needs assessments and interviews were conducted with 20 people with some physical disability, including those affected by leprosy (not exceeding one from each household) and 20 people without any disability, from each district. Thus, the total number of respondents for the study in Gorkha and Morang district was 80. The collected data was further processed and analysed using SPSS.

A transect walk and a needs assessment survey were conducted at the field level. First, a transect walk was conducted to determine the feasibility for the needs assessment survey in the particular areas. The transect walk included a systematic walk across the research areas with local people to explore 3R conditions through observation, dialoguing, and producing transect diagrams. Second, a needs assessment was conducted to determine the difference between the current situation and the desired situation. The needs assessment survey was complemented using various tools, comprising: (1) quality of life by WHOQOL-BREF scale; (2) social participation using the Participation-Scale; and (3) in-depth interviews.

The WHOQOL-BREF scale was used to measure the quality of life in both Gorkha and Morang district. The tool assesses individuals’ perceptions under the conditions of their cultural and value systems, norms and concerns, as well as personal goals (WHO, 2016). It measures various domains including social relationships, physical health, psychological health and environment. The concept of social participation is an important driver that can generate valuable insights into a given situation of a targeted community. Therefore, Participation-Scale was used, as previous studies had demonstrated this as suitable for use with people affected and stigmatised, by leprosy (Brakel et al., 2008; Stevelink et al., 2012; van der Zee, 2013).

In-depth interviews were conducted with respondents to study their perspectives, values, experience on present situation of agriculture, barriers/obstacles in agriculture and water management/use, existing water conservation and management techniques and lastly their expectations from the research. The interviews were used to provide further context to data collected on specific issues. Individual or household level interviews were favoured compared to focus group discussions due to possibility of potential participants not being included and/or may not feel comfortable to express in a group.

Study constraints and limitations

This project is one of the few studies that researches, implements and evaluates the impact of improving agricultural water management for the vulnerable groups in Nepal. The study has some limitations that may have influenced the findings. First, it was difficult to include people with physical disabilities, particularly those afflicted with leprosy, because of existing stigmatisation. Also the figures provided by the NGOs, and the health department were different. Most of the affected people change their names during treatment or go to another district for treatment. Second, we relied on data provided by the government health departments, agricultural office departments, and NGOs. People who are extremely marginalised and ‘hidden’ may have not been

---

3 This study has not taken into account highly affected people assuming that they may not be able to engage in agriculture water management.

4 Due to the following reasons
   - People with leprosy feel uncomfortable in participatory work and socializing process. They do not want to let others know about leprosy in them (leprosy is a hated impairment).
   - There is still a belief in the society that Leprosy is a very bad disease. Even when it is known that the affected people are under medication, others fear to come in contact with them.
included in this data. Third, the prevalence of stigma in the communities may have influenced the answers given by respondents and thus led to underreporting. Nonetheless, we tried to minimise this by guaranteeing the respondents' confidentiality and privacy. Lastly, the study has not addressed the access and information needs of a broader range of people with disabilities, such as blind or deaf people and those with cognitive and mental health difficulties who could well be involved in agriculture and water issues.

Results & Discussion

The result of the needs assessment details the current situation of households, community agricultural activities and 3R techniques in the research areas. This research looks at the household level as the unit of analysis given that it is the chief element in which rural people live. Before exploring the barriers faced by people with physical disability and marginalised women in accessing water for agriculture, the challenges experienced in the agricultural sector need to be understood.

According to the Ministry of Agricultural Development (MoAD) the national GDP depends majorly on agriculture which was 33.1% in 2015. The dependency on agriculture was 36.8% in 2013 (MoAD, 2015). This indicates that the contribution of agriculture is decreasing. The survey undertaken in two villages in each district i.e. Urlabari and Patharisanichare in Morang and Chhoprak and Gorkha Municipality in Gorkha brought forth some challenges experienced by farmers in crop production. According to the field survey (2016), in total, 67.5 percent of the respondents mentioned that accessing input materials for agriculture was their main challenge. This commonly resulted in delays in cropping. Other challenges mentioned were the lack of irrigation and extension services, increased pest infestation, and unpredictable precipitation. Lack of adequate marketing facilities for selling the harvest was found to be another barrier. This barrier was found to be more common in the mid-hill region compared to Terai (plains). This was established through the field survey where 70 percent of the respondents in Gorkha district reported marketing is still a major challenge, as against only 7.5 percent in Morang district (Field survey, 2016).

Barriers faced by persons with disabilities in accessing water for agriculture

Agriculture itself is a labour intensive occupation requiring huge amounts of endurance and mobility. Though some people with physical disabilities are involved in agriculture, they are not content with the kind of agricultural work they participate in due to lack of disability-friendly activities, tools and infrastructure in agriculture, and lack of irrigation technologies and facilities that are sensitive to the specific needs of people with disabilities. Depending on the individuals impairment and access needs they may not be able to attend trainings or workshops that are held by development agents.

Education, social security, and relevant employment are the hindering factors for persons with disabilities that contribute to slow improvement and progress. The underlying causes are attributed to or influenced by poor security, poor social security allowances, low enrolment rate in higher education due to lack of facilities, lack of extension service programmes focusing on people with disability. For persons with disabilities this translates to having a small chance to participate in agricultural and water management trainings and workshops, depending on the severity of their disability. Even when persons with disabilities get a job they are mostly earning a low-income, making it difficult for them to invest in agriculture. Lack of government plans and programmes that are friendly and inclusive for people with disabilities, particularly in the agricultural sector, further deter their progress.

The agriculture sector in the two study districts faces several challenges, such as inadequate water for irrigation from nearby sources and the lack of money to invest in irrigation water sources that are farther away. Some of the surrounding community members and respondents from relevant local NGOs claimed that persons with disabilities became more marginalised in their access to agricultural water management projects and programmes due to their inability to move long distances.

Family members and neighbours further reduced the access of persons with disabilities to agricultural and water related projects. For instance, some family members opposed social mobility of both females and members with disability in the house and restricted their contact with water, especially for those with a disability related to leprosy as they
believed that leprosy could transmit through water. People with physical disability due to leprosy said that leprosy worsens by handling agricultural water (Field interview, 2016). Furthermore, the respondents highlighted that they are disliked, as many non-disabled people show a sense of (latent) animosity because they are perceived as being unproductive, with little to no income. Other respondents with disability observed that their neighbours’ discriminating behaviour has led to the feeling of social exclusion for being impaired. For example, neighbours diverting water in their field in their absence as a person with disability cannot frequently visit the field due to their physical condition. The respondents also revealed that as much as they were interested in participating in group meetings, committees or events that would benefit them too, they were not informed/invited or involved in the construction work and use of micro irrigation projects that intend to benefit the whole community.

Poor access to water for people with disabilities is further exacerbated by a lack of reservations for them in the development committee or any membership thereof. With regard to training courses, awareness raising programmes, and income generating activities, many respondents, emphasised that they are informed late about such events, if at all.

**Barriers faced by women in accessing water for agriculture**

In Nepal, land and water rights are closely related, although water is often a public good. According to the Central Bureau of Statistics (CBS), in Nepal, 18 percent of the land is female owned (CBS, 2011). The decision-making and participation in agricultural water management (water access) also depends on the following factors:

i. The distribution of authority and responsibilities between men and women: Women are mainly responsible for or restricted (socially) to household chores followed by agricultural tasks, while men are mostly responsible for tasks other than domestic tasks (i.e. outdoor tasks like agriculture, marketing, etc.). This situation is similar in both study areas. In such cases, respondents acknowledged that women have a lesser chance of being involved in other related agricultural activities i.e. knowledge and information platforms and trainings; or they receive late information regarding such activities as they are busy performing domestic tasks.

ii. Ownership of land and access to water (or participation in water management): In general, participation in water users associations or access to water for agriculture is strongly linked to ownership of land. Findings indicated that land is mainly owned by male-headed households (Field observation and discussion, 2016). This is further supported by some respondents confirming that although women “own” the land on paper, they still do not have control over it due to the social and gender norms and practice. This diminishes the chances of women's access to and control over water for agriculture. Moreover, women in the communities revealed that they constantly find themselves excluded from social and development networks dominated by males.

iii. Unequal treatment: Even if women participate in irrigation schemes, there are differences in timing and promptness of water delivery. This is also supported by Zwarteveen (1997) describing that the allocation of water rights is not equal between men and women. Findings by Meinzen-Dick and Zwarteveen (1998) also indicated that in South Asia female participation is low in water user associations as part of this is due to the formal and informal membership criteria that ignore women. Women are mostly busy with household tasks. This indicates that irrigation timing is a challenge for them as they have to balance household tasks and water for land. Findings further revealed that night irrigation is difficult for female-headed households due to social norms and security (Field survey, 2016). In such cases, women also reported that they either hire or seek help from other men during peak irrigation season.

**Intersection between gender and disability in agricultural water management**

During the survey, the participation-scale and interviews of respondents revealed that gender and disability intersect in several ways. The main commonality for both groups is with regard to the
access to information (information related to development activities in agriculture and irrigation), and when and how information is delivered. Majority of the respondents reported that the root cause of the challenges they face have to do with how development programmes are designed and planned, or in other cases non-inclusion and lack of targeting women and people with disabilities in farmer groups and cooperatives. Moreover, in some cases, information does not reach the marginalised. According to the disability-scale, a comparison of participation restrictions of various groups of people in Morang and Gorkha district, revealed that people with disabilities (1.4)⁵ are more restricted from socio-economic development programmes or initiatives as compared to the non-disabled (0.3) (Field survey, 2016). Notably, people with disabilities indicated that having an equal opportunity to find work and doing work as hard as others ranked as highly restricted, while non-disabled people ranked these indicators at 1.1 and 0.5, respectively (ibid). Also, the comparison between non-disabled and people with disabilities regarding economic contribution to the household, travelling outside the village being socially active, and good/high respect in the community were scored high by people with disabilities in both, Morang and Gorkha district. However, Gorkha district experiences slightly higher participation restriction.

In contrast, the participation-scale indicates that females scored lower than males in factors such as equal opportunity to find work. However, factors such as doing work as hard as others were scored slightly higher by women compared to men. This indicates the level of inequality between men and women within the community and household level. Some of the common aspects of gender and disability intersecting in agricultural water management are mentioned below:

- Lack of access to information and participation in farmer information events;
- Women and people with physical disabilities are not involved in meetings and decision-making;
- Lack of access to infrastructure, facilities and services; and
- Extension officers lack the capability (skills and knowledge) and are not sensitized to include the people with physical disabilities.

Furthermore, to increase participation in mainstream development, the respondents made the following suggestions:

- Creating awareness on different social, economic and health aspects;
- Providing credit facilities;
- Commercialising agriculture;
- Disability-friendly infrastructures, supporting departments and programmes;
- Providing 'in-situ' employment opportunities.

Table 1: Average of score used in construction of participation scale by categories of households

<table>
<thead>
<tr>
<th>Participation indicators</th>
<th>Categories of household</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Able</td>
</tr>
<tr>
<td>Equal opportunity to find work</td>
<td>1.08</td>
</tr>
<tr>
<td>Doing work as hard as others</td>
<td>0.45</td>
</tr>
<tr>
<td>Economic contribution to the household</td>
<td>0.00</td>
</tr>
<tr>
<td>Visit outside the village</td>
<td>0.13</td>
</tr>
<tr>
<td>Socially active</td>
<td>0.23</td>
</tr>
<tr>
<td>Good respect in the community</td>
<td>0.23</td>
</tr>
</tbody>
</table>

Source: Field survey, 2016
(home gardens, food processing, cottage industries); and
• Women empowerment.

Although there are common aspects in agriculture and water management when it comes to being female or being a person with disability the reasons are different as the research has also found. Women are stuck in household chores, whereas the people with disabilities may not be, but both are equally unable to attend meetings, participate in casual recreation and lack social activeness. So, there are common challenges but the reasons for these challenges to prevail differ.

Based on the aforementioned factors, gender and disability face similar type of barriers of being excluded or a lack of access to information. Whereas the reasons behind exclusion as explained are different, similar dimensions can be identified, which are social, physical (environmental) and institutional. First is the social dimension of exclusion from groups and committees related to development; women and people with disabilities are not invited, or involved in the user groups, especially when speaking about agricultural water or irrigation schemes. Mostly, senior men or head of the households that have access to land attend group meetings and committees, i.e. land is mainly under the name of a male member of household or family. Second, the institutional dimension is that development related entities undertaking projects and conducting training programmes linked to agricultural water management need to acknowledge and integrate gender and disability in their extension services, which is currently lacking. Third, the environmental (physical) dimension of exclusion is the unwillingness of people to engage or recognize the barriers related to inaccessibility of information about agriculture and water for the people with disabilities and women. In some cases respondents mentioned that when a person is not in a users’ committee then: (1) a person is not aware of the activities about agricultural water management practices; and (2) a person is excluded from information related to scheme, irrigation activities, training programmes, etc. (Field survey, 2016).

Considering these barriers and commonality of exclusion for these vulnerable groups the role of providing information and including them in different activities related to agriculture water management could be crucial to improve access to water for agriculture and for creating opportunities for improving their livelihoods.

These opportunities, which are also found in this studies’ field survey, on increasing and improving the role of women and people with disabilities in agricultural water management can be considered at different levels of intervention. At the field level, techniques to improve soil moisture and levels of organic matter by mulching, green manuring, and composting were mentioned to be effective as well as feasible opportunities for vulnerable groups. Specially designed soil tillage and farming tools could help them become more emancipated as well as generate employment.

At water systems level, water harvesting and recharge structures such as water buffering techniques can reduce the walking distance to water points; also the institutions running these schemes (irrigation and domestic water) can offer ample opportunities for women and people with disabilities to work as accountants and book/record keepers.

**Conclusion and way forward**

This research has described the current situation of gender and disability related barriers and challenges experienced in agricultural water management in both Gorkha and Morang district. The UNCRDP and CEDAW conventions have already existed for a long time; however, implementation in practice is often not seen. Therefore, this research provides information to support more detailed research into the types of challenges people with disabilities face, their implications and the forms of governance, development, technical, and societal mechanisms through which these challenges can be faced.

Concluding from the research, some general points can be made.

With regard to the barriers that women and people with physical disabilities encounter in agriculture and water management, this study has shown that they intersect at the point of exclusion. The reasons for exclusion may be social, environmental (physical) or institutional. In terms of social exclusion, for both women and people with disabilities, there is stigma and in terms of environmental and institutional factors, government and development agents either entirely neglect these vulnerable groups or are not sensitized to appropriately address and facilitate change.
This research project will continue looking at how women and people with physical disabilities can be ensured household food security and how improved rural livelihoods can be accessed through increased participation and acceptance in group meetings and committees, farmer information events, and relevant development projects. Furthermore, it will also study inclusive approaches to upscale existing water harvesting and soil and water conservation techniques and provide broader access to development services. Finally, it is thought that by improving agricultural water management and through participation and involvement of all stakeholders, the discrimination of women and people with physical disabilities can be reduced in the study area.

References


