



Shifting Gender Relations in Agriculture and Irrigation in the Nepal Tarai-Madhesh

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Tula Narayan Shah and Floriane Clement

CGIAR Research Program on Water, Land and Ecosystems

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Front cover image: Women returning from a festival in Fulkahakati village development committee, Siraha district, Nepal (*photo*: Fraser Sugden).

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ACRONYMS AND ABBREVIATIONS

APP	Agricultural Perspective Plan
CGISP	Community Groundwater Irrigation Sector Project
DoI	Department of Irrigation
EGP	Eastern Gangetic Plains
GDC	Groundwater Development Committee
GWRDB	Groundwater Resources Development Board
IWMI	International Water Management Institute
IWRMP	Irrigation and Water Resources Management Project
MFI	Microfinance institution
NGO	Nongovernmental organization
SMIP	Sunsari Morang Irrigation Project
VDC	Village Development Committee
WECS	Water and Energy Commission Secretariat
WUA	Water User Association
WUG	Water User Group

SUMMARY

The Eastern Gangetic Plains of Nepal, known as the Tarai-Madhesh, have a deeply inequitable social structure. Poverty is deeply entrenched as a consequence of class inequalities, legacies from a feudal tax hierarchy and inequitable landlord–tenant relations. Deep-rooted gender disparities are endemic.

In recent years, growing male out-migration has resulted in new patterns of gendered vulnerability, with women increasingly tasked with managing and accessing irrigation. While these women generally experience economic insecurity and increased work burdens, their experiences are highly dependent on their class, ethnicity and religion. In addition, women's access to credit and state subsidies, as well as their capacity for engaging in enterprises and other activities, also determine the risks and opportunities they face.

Understanding the realities of women in the Tarai-Madhesh, including the complex interrelations between the social, economic, historical and cultural factors that shape their lives, is a prerequisite for effective agricultural development programs and strategies.

Therefore, this report explores how women perceive participation and empowerment vis-a-vis access to water and other agricultural resources. The authors draw on fieldwork carried out over 6 months in 2015 and 2016. The work focused on communities in two districts of the Tarai-Madhesh – Sunsari and Siraha – selected for this study due to their dependence on access to canal water and groundwater irrigation, respectively.

The data indicate that gendered vulnerability is indeed intricately connected with other axes of difference, such

as caste and economic status. As a result, many women's well-being has decreased as a consequence of male out-migration, but some women have also become empowered in new ways, taking up enterprise opportunities and active roles in water user groups.

However, in Sunsari district, women's roles within water user associations for canals were found to be marginal and largely tokenistic. This is despite women's critical role in agricultural production and their dependence on access to canal water. In Siraha district, women from poorer households without their own pumps faced challenges in accessing groundwater. However, the biggest challenges pertaining to groundwater access were identified as institutional weaknesses.

At the level of policy and external development interventions, the authors identified a dominating narrative on women's limited participation in agriculture being a result of 'social norms'. Public irrigation agencies used this myth to absolve themselves of the responsibility for ensuring gender equality in program implementation. It was found to divert attention away from gender discrepancies within public irrigation agencies, thereby preventing a reflexive and critical effort on greater gender equality within the bureaucracy.

The authors conclude that strengthening equitable irrigation user groups, along with capacity building for farmers and program implementers, is critical for improving women's access to irrigation and overall well-being. Women should be ensured meaningful, rather than tokenistic, participation, including leadership roles. It is recommended to link irrigation user groups to other income-generation schemes and let cooperation across groups facilitate access to better credit, finance and agricultural inputs.

1. INTRODUCTION

The Eastern Gangetic Plains (EGP), spread across the Tarai regions of Nepal, North Bengal and Bihar in India, and northern Bangladesh, present a paradoxical situation in relation to agriculture, poverty and inequality. The region – home to approximately 600 million of the world's poorest people – is characterized by fragmented landholdings, widespread landlessness, poor investments and infrastructure, out-migration, and inequalities based on class, caste, ethnicity and gender (Lahiri-Dutt 2012).

Although possessing abundant groundwater resources and large tracts of cultivable land, the region houses large concentrations of the poorest people in South Asia, living in fragmented lands that are largely under-irrigated and agriculturally inefficient. The region's skewed underdevelopment is persistent across national borders, despite temporal variations in policies, investments and interventions. Not surprisingly, several projects aimed at mitigating poverty have been initiated in the region, some with a gender lens. Nonetheless, poverty persists and is aggravated by an increasingly erratic climate and terms of trade stacked against agriculture (Sugden et al. 2014). Recent studies indicate that a new agrarian crisis has unraveled across the region, driving the 'feminization of agriculture', i.e., out-migration of a young generation of men from these poorly performing agrarian economies. This shift leaves women behind to carry out agricultural activities, but they have restricted access to extension services, infrastructure, institutions, credit, and markets to manage productive (as well as reproductive) responsibilities (Sunam and McCarthy 2016; Tamang et al. 2014; Sugden et al. 2014; Singh et al. 2013; Datta and Mishra 2011).

The Gangetic Plains of Nepal, known as the Tarai-Madhes, has historically experienced economic and

cultural marginalization as a region (Gaige 1970), and an extractive relationship with Kathmandu (Regmi 1976). The region today has a deeply inequitable social structure. Central to the reproduction of poverty in Tarai-Madhes are the deeply entrenched class inequalities, and a legacy of the old feudal tax collection hierarchy, with a high incidence of inequitable landlord-tenant relations. Land tenure and ownership is one of the most significant challenges facing agriculture in the Tarai-Madhes, and indeed much of the EGP (Sugden 2013, 2017). The primary axes of inequality are grounded in landownership. At the apex of the agrarian structure is a class of larger landowning farmers from the EGP upper and middle castes, as well as large absentee landlords from the towns, many of whom are of hill upper caste descent. At the base of the agrarian structure is a large class of landless laborers, marginal farmers and tenant farmers, a group who forms the majority of the rural population in the region (Sugden 2017).

Although gender relations have changed significantly in the region over the past few decades, particularly in relation to access to education, deep-rooted gender disparities still exist. Rankin (2003) argued that it is the interrelationships between spatial practices, economic strategies and gendered symbols that perpetuate the unequal status of women in Nepal. Recent research in the Tarai-Madhes region also indicates that sectoral interventions have neither served the purpose of agricultural development nor have they positively changed the lives of poor women and men (Lahiri-Dutt 2014; Sugden et al. 2014). A growing body of research points to traditional, old and new gender-specific challenges in agriculture in the EGP. These challenges include women having few or no landholdings, and inequitable access to agricultural extension services, infrastructure, markets and credit (Kishore et al. 2015).

More recently, growing male out-migration has resulted in new patterns of gendered vulnerability, with women often facing an increased workload, economic insecurity when remittances are sporadic, and limited capacity to independently adapt to climatic and non-climatic stresses (Karn 2006; Khanal and Watanabe 2006; Lahiri-Dutt 2014; Sugden et al. 2014). However, the overall discourse of the feminization of agriculture in Nepal remains complex when discussed in the context of gender participation and empowerment. There are also emerging trends of out-migration of poor women, primarily to informal, unorganized sectors (Sunam and McCarthy 2016). Furthermore, the women who are left behind experience clear differentiation based on class, ethnicity and religion, and hence experience quite different risks, challenges and opportunities to those experienced by men.

Given the extremes of landlessness, poverty and vulnerability in the population, livelihood security is determined not only by access to land and financial resources, but also by viable and sustainable ecosystems and natural resources. Water, in particular, is critical for households to achieve food security from small and marginal landholdings. In a climate with a highly seasonal rainfall, gaining access to irrigation water during the dry months is the only way households can raise productivity to levels that will meet their consumption needs. With increasingly erratic monsoons, irrigation is even required during the monsoon season to ensure a healthy paddy crop (Suhardiman et al. 2015).

At a time of male out-migration, women are increasingly responsible for managing and accessing irrigation water (Upreti 2008). Thus, it is critical to understand the gendered or other constraints that households face in accessing water for irrigation. Sector-specific interventions in the region, for example, to improve groundwater irrigation are important in this context. However, it is not clear whether such initiatives address the complexity of gendered poverty in the region. Further, feminization of agriculture has transformed women's roles in the sector. As production relationships in agriculture evolve, traditional approaches to engaging women are increasingly changing. Activities and interventions are planned and influenced mainly by external donors. These

interventions are often top-down in character and are not necessarily based on detailed research of the realities on the ground (Lahiri-Dutt 2012). Attention to gender in agricultural development programs also tends to imagine women as an unvarying group, undivided by class, caste and other factors that permeate the region's economy, culture and context.

While exploring gendered constraints to accessing agricultural resources, such as water, it is important to note, however, that a whole plethora of other resources exist, and access to these can mediate the broader process of gender empowerment. Such resources include credit, state subsidies, and capacity for women to engage in enterprises and other activities. This must be balanced against the constraints women face in the agriculture sector.

These constraints raise broader questions about how women themselves perceive different axes of gendered inequality, be it work burden, unequal access to resources or unequal power in decision making. This paper, thus, focuses on answering some of the broader issues that are raised. Further, this paper discusses different forms of 'empowerment', how it is valued and whether trade-offs exist. These questions are of critical importance when formulating gender engagement strategies in the agriculture and irrigation sectors. How migration itself affects the multiple sides of the gender empowerment and inequality interface is also emphasized.

This report is comprised of five chapters: The introduction in Chapter 1 outlines the broader sociocultural and agricultural scenario of Nepal to place the study within a contemporary country perspective. Chapter 2 introduces the key research questions, while Chapter 3 outlines the methodological underpinnings and the process of engagement during fieldwork, including the use of 'multi-sited' ethnography and various data collection tools. Chapter 4 presents findings and analysis, examining the field data and discussing how people formulate the meaning of gender inequality, and subsequently engage themselves in irrigation and livelihood means in the family. Finally, conclusions and recommendations are presented in Chapter 5 based on the discussion.

2. RESEARCH OBJECTIVES

The purpose of this report is to understand the gender dynamics in agriculture in two districts (Sunsari and Siraha) selected for this case study in Nepal's Tarai-Madhes region. The aim is to understand the shifting gender relations in agriculture in regions dependent upon different types of irrigation system, and which are differently endowed in terms of access to water. First, the report explores how gender relations are evolving in the context of male out-migration and rapid sociocultural change, while seeking to understand how these changes are manifested in the agriculture sector, particularly with regards to access to irrigation water. Second, it seeks to explore whether gender inequalities,

and inequalities between different groups of women, are perpetuated or undermined by these agricultural and social changes, and the mediating role played by access to water. Third, it seeks to explore how women perceive participation and empowerment vis-a-vis access to water and other agricultural resources. Finally, it seeks to review the role of state and non-state development interventions in facilitating women's access to irrigation water when set against the larger changes in the agriculture sector.

This report draws on research grounded in an ethnographically informed context, in which the centrality

of gender relations in societal accommodations of agrarian change is emphasized. The meaning of gender roles is understood to be socially constructed, while coping with such roles is based on everyday practices and livelihood

compulsions influenced by cultural perspectives. Further, this report attempts to elaborate discussions beyond gender norms and capabilities of women to understand gender inclusion as a variable in social change.

3. RESEARCH METHODOLOGY

Given the complex nature and multilayered issues and problems of gender engagement in the family and community, field research was based upon a multi-sited ethnography, focusing on qualitative methods. The methodological approach was particularly informed by anthropological insights (Falzon 2009; Gupta and Ferguson 1997; Marcus 1997) that explore the meaning of gender within a socially and culturally structured framework. Various tools of qualitative design were used, with the intention of engaging in discussions about gender relations in agricultural activities in the Tarai-Madhes region of Nepal.

Data collection took place over a period of 6 months in 2015 and 2016. Various techniques were employed, including case studies, key informant interviews, collection of personal experiences, introspective notes, life stories, informal and formal interviews, and observations that described routine, problematic movements and meanings in individual lives. Apart from that, resources were mapped for all sites in both the districts to identify potential informants in the community. The core data source was 48 household interviews. In each village, 12 interviews were conducted and households were selected at random. This interview included quantitative data on livelihoods as well as semi-structured questions covering topics such as livelihood change, migration, access to resources and shifting gender roles.

This was supplemented with data from key informant interviews conducted with a range of institutional representatives including local development stakeholders such as heads of Water User Associations (WUAs) and farmer clubs, local political leaders, ethnic leaders, school teachers, health workers, women leaders, cooperative members, the District Agricultural Development Officer, a social scientist from Sunsari-Morang Irrigation Office and input vendors. In Sunsari district, a number of gate operators were interviewed by the Irrigation and Water Resources Management Project (IWRMP). This project is funded by foreign grant assistance from the World Bank and implemented in collaboration with WUAs and the Government of Nepal.

3.1. Field Sites

This research study focuses on communities' access to surface water and groundwater irrigation in two districts of the Tarai-Madhes in Nepal: Sunsari and Siraha. Sunsari was selected due to the relative importance of canal irrigation, and the recent interventions which have sought to promote equitable management of water under the IWRMP (Dol 2008; GDC 2014). There were two

villages which were situated within the command area of the Sitagunj canal, part of the Morang-Sunsari irrigation project: Ekamba and Amaduwa Village Development Committees (VDCs)¹. The sites in Siraha were selected because they were relatively dependent on groundwater: Bhagwanpur and Fulkahakati VDCs (Figure 1).

3.1.1. Sunsari district

Ekamba VDC is situated at the head and Amaduwa VDC at the tail-end of the Sitagunj canal in Sunsari district. The irrigation schemes in these VDCs are implemented under the IWRMP. To fulfill the irrigation needs of Ekamba and Amaduwa VDCs, they are linked with Sitagunj and Ramgunj canals under the IWRMP. For this research study, Lohani village of Ekamba VDC and Kharotole of Amaduwa VDC were selected for direct observation.

3.1.1.1. Lohani village of Ekamba VDC, Sunsari district

The total area of Ekamba VDC (now Itahari Municipality-15) is 12.5 square kilometers (km²). According to the 2011 census (CBS 2012), the population of this VDC is 8,861, out of which 4,149 are male and 4,712 are female. This area is dominated by the *Tharu* ethnic group (5,846 individuals), followed by the *Hill Brahmin* group (756 individuals). The total number of households in this VDC is 1,983, and the average household size is 4.47. The literacy rate of the VDC is 67.9%. Lohani village consists of approximately 160 households altogether, inhabited predominantly by people of the *Tharu* community.

Paddy, cultivated over the monsoon, is the predominant crop in Sunsari, as is the case in much of the Tarai-Madhes. Pulses, wheat and maize are dry-season staple food items occasionally used for daily consumption, although the latter two are rarely cultivated in Lohani village today, due to limited water supply from the canals. Most of the families in this village are self-sufficient in terms of grain. However, it is noteworthy that almost 75% of the land in this locality is owned by absentee landowners, predominantly of hill origin, most of whom reside in the large towns of Itahari, Dharan and Biratnagar. This landownership structure is widespread across the Eastern Tarai districts of Morang and Sunsari, and is related to historical land grants and the tax administration hierarchy during the feudal Rana period, and the disenfranchisement of the *Tharu* community due to debt and deception (see Sugden and Gurung 2012; Sugden 2017). Landowners include hill origin Brahmin and Chhetris, although in this village, there is also land belonging to *lahures* – people who work as soldiers for the Gurkha regiments of the British and Indian army – who are mostly from the indigenous groups of the hills, and are not from the historic landowning elite. Most

¹ A Village Development Committee (VDC), the local unit of governance, which has recently been dissolved and replaced by rural or urban municipalities.

FIGURE 1. THE VILLAGE DEVELOPMENT COMMITTEES UNDER STUDY IN SUNSARI AND SIRAHA DISTRICTS, BANGLADESH.



Source: Created by Fraser Sugden.

of the land is cultivated by local *Tharu* farmers, who work as sharecroppers or lease land on a fixed rent basis.

There are many families without any land who do not engage in agriculture. These people are either dependent on remittance money from migrants or they are daily wageworkers in nearby markets, such as Itahari, Jhumka and Biratnagar. In almost all the families, one or two men have migrated to one of the Gulf countries to seek better employment opportunities, whereas only one person from the village is in a government job. Out of the interviewed households, three were landless laborers, four were tenants or part-tenants, and five were owner cultivators, albeit with marginal plots of less than 1 hectare (ha).

The indigenous *Tharu* ethnic group is primarily an agricultural community, with animal husbandry being an additional occupation. The *Tharus'* cultural imaginations focus largely on agricultural production, and they attempt to maintain a space outside of the preexisting caste structure of Nepal. Moreover, they identify themselves based on their place of origin and this place is also the name given to their clan.

Women's status in the society is greater in Ekamba compared to the other research sites. Women experience greater freedom in terms of mobility. Young girls and women can be found riding bicycles to commute to work in the nearby markets. This has also contributed to income generation and a greater level of independence for women in the village. However, their work burden remains the same. Apart from their reproductive roles, women also take part in productive activities and other regular household tasks.

3.1.1.2. Kharitole village of Amaduwa VDC, Sunsari district

Amaduwa VDC is located in the southeastern corner of Sunsari district, by the tail-end of the Sitagunj canal. It is situated at the border between Nepal and India. The total population of the VDC is 9,216, out of which 4,699 are male and 4,517 female. This locality is also a predominantly *Tharu* community (2,732 individuals), followed by a Muslim minority (738 individuals). The total number of households in this VDC is 1,837, spread across 19.9 km². The average household size is 5.02, while the literacy rate is 53.5%, according to the 2011 census (CBS 2012). The *Tharus* of Kharitole identify themselves as being part of the lineage of the *Tharus* of Rajbiraj, and they dress to identify with their group.

While in Ekamba, the canal is functional, only the remains of the canal structure exist in Kharitole. At present, most of the structure of the tertiary canal is not visible in the village. However, the main canal can be seen as being redundant because it has not been cleared for years. In some places, farmers have removed soil from the canal bed and turned it into land to cultivate. Many others have built houses beside the canal bed, and a few have filled the canal track with soil.

Looking at these two villages in Sunsari district, it is evident that irrigation interventions have produced mixed outcomes. The scarcity of water from canals, which are a public resource, substantially influences the communities' access to natural resources in Amaduwa, particularly for more marginal, female farmers.

In terms of landownership, it is very similar to Ekamba, with high levels of tenancy and a predominance of marginal

landowners (Figure 2). Five tenants or part-tenants were interviewed, along with one landless laborer and six small owner cultivators.

3.1.2. Siraha district

While in Sunsari district, irrigation is mainly carried out through a surface water irrigation project within IWRMP, communities in Siraha district are mostly dependent on groundwater irrigation. Both sites in Siraha district – Bhagwanpur and Fulkahakati – are served by groundwater irrigation facilities. Established in 1989, the Groundwater Resources Development Board (GWRDB) in Lahan works in Siraha, Saptari and Udaypur districts, and plays an important role in providing irrigation facilities to farmers in these areas. At the time of this research study, the office in Lahan aimed to provide 280 shallow tube wells in Siraha district, including the installation of 14 deep tube wells, of which eight were operational in Siraha. Each shallow tube well is designed to cover at least 5 *bigha* (approximately 0.25 ha) of land in each ward of the VDC. Therefore, a minimum of five tube wells in one ward of the VDC can irrigate 20 *bigha* of land. However, these are not operational in all the VDCs (DoI 2008; GDC 2014).

3.1.2.1. Bhagwanpur village, ward no. 3, Siraha district

Bhagwanpur is an old settlement situated at the southeastern corner of Siraha district. To the south, it connects with the border of the Indian town of Laukaha of Madhubani district in Northern Bihar. This VDC is spread across 8.7 km², with a total population of 4,157, including 2,113 women. The total number of households in this VDC is 733, with 132 households in ward no. 3 with an average

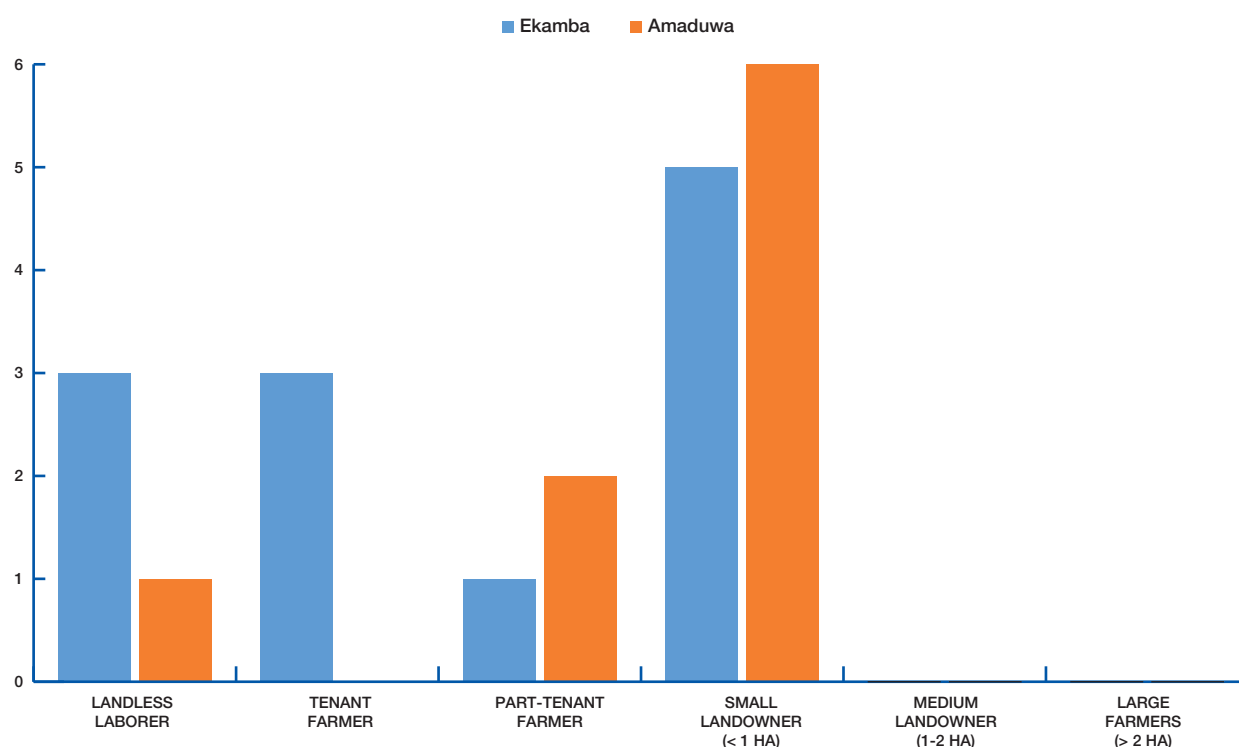
household size of 5.66. The literacy rate of this VDC is 51.8%, according to the 2011 census (CBS 2012).

Ward no. 3, originally called Bhagwanpur, has a locally vibrant market. Rice, vegetables and other agro-products produced in the area are traded in the market, supported by a *palla*² (a mobile grain collection stall) at Bhagwanpur market, and a *haatiya* (periodic market). Apart from trading locally, the people of Bhagwanpur and surrounding areas prefer to go across the border to Laukaha³ to purchase all other types of items for daily use.

Although Bhagwanpur VDC is dominated by people of the *Yadav* community, other caste groups such as *Dalits* are also present in good numbers. Ward no. 3, the study site, however, presents a heterogeneous group in terms of caste divisions.

A distinct division of gender roles exists in the Bhagwanpur area. The private spheres mainly belong to women, whereas the public space is dominated by men. Women perform all types of reproductive roles and activities, including social or community-related tasks, but the majority of them are not engaged in any productive work. Women mainly depend on men for finances. The percentage of literate women with higher education is lower than that of men, restricting women's opportunities to compete and perform any work outside the home to sustain their livelihoods. In the borderland areas of Siraha district, in general, and in Bhagwanpur, in particular, gender norms are to a large extent defined by conservative cultural expectations.

FIGURE 2. LANDOWNERSHIP PATTERNS IN EKAMBA AND AMADUWA VDCs IN SUNSARI DISTRICT.



² *Palla* is a movable stall where people sell their crops and grains in exchange for money. It is a traditional practice of local marketing in the Tarai region's agrarian society.

³ This Indian border post of Laukaha is hardly 2.5 km from Bhagwanpur, and people prefer to purchase their necessary items from there as they are cheaper than in Lahan market.

In terms of landownership, Bhagwanpur displays similar patterns to those of Sunsari district, which is characterized by relatively high levels of landlessness, although there are few absentee landlords here. The better-off farmers in this border region are often middle or upper caste large farmers, who historically benefitted from the Rana era tax collection hierarchy. We interviewed four tenant or part-tenant farmers and two landless laborers, with the remainder being small owner cultivators (see Figure 3).

3.1.2.2. Fulkahakati village, ward no. – 7, Motiyahi, Siraha district

Jaypur-Motiyahi - 7 in Fulkahakati VDC is located 3 km south of Mahendra Highway. The total area of the VDC is 21.3 km², and it houses 10,302 people, of which 5,081 are male and 5,221 are female. The village is comprised of 1,795 households, with an average size of 5.74. The literacy rate is 50.6%, according to the census (CBS 2012). Most of the households depend on farming, although labor migration to the Gulf countries is high, with one or two men from almost all the families having migrated.

Jaypur-Motiyahi is dominated by the *Kamat* or *Kamati* caste, with 108 out of 120 households belonging to this caste. A few people in this village are of the *Mahato*, *Sah* and *Danuwar* castes. This village is also recognized as an important vegetable farming area within Siraha district.

In terms of division of gender roles, men are mostly involved in labor-intensive activities in agriculture, such as plowing, irrigating, etc. Women spend their time on household chores and agricultural activities that may not require hard labor, but are time consuming and require more patience. In addition, women take the lead in selling

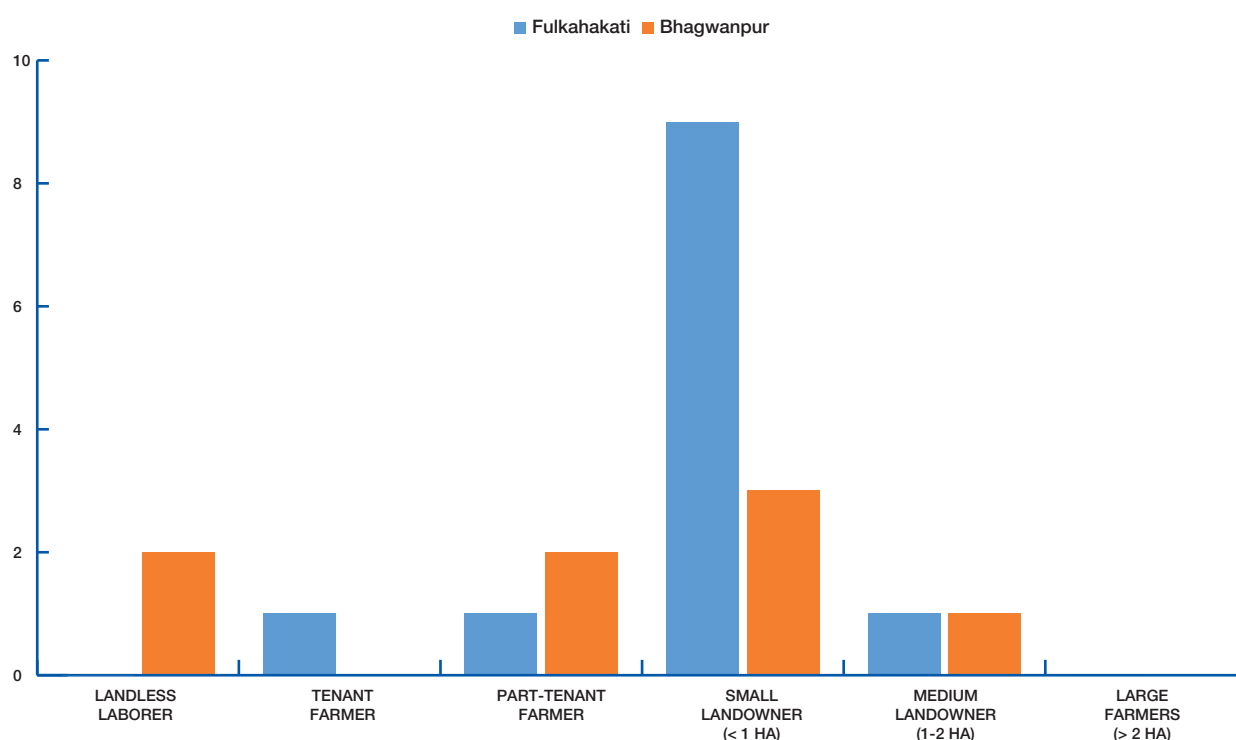
vegetable products in local markets, such as Ghurmibajar, Mirchaiya, Golbajar, Choharwa, Chainpur and Sukhipur.

Jaypur-Motiyahi is well connected with deep and shallow tube well irrigation facilities, either provided by respective government offices or installed privately by farmers. Therefore, even though studies suggest that this area of the central Tarai is becoming prone to drought due to disruptive climate fluctuations (Sugden et al. 2014), the farmers in Fulkahakati are able to produce good yields of vegetables with other crops.

None of the interviewed households reported that they were landless, and key respondents suggested that the majority of households in this locality were small landowners, i.e., with less than 1 ha of land. This is because this area was previously a forested belt which was settled in the last 50 years. Thus, land was available for cultivation, and it was free of the feudal landlordism present in regions with a longer history of settlement.

From studying these locations and people's social engagement at various sites in the two districts, it is clear that gender relations are asymmetrical across sites. Gender norms vary substantially, are in constant transition and are influenced by various factors. The levels of out-migration of men, the presence of traditional cultural practices and levels of engagement of women in income-generating activities through agricultural work substantially influence gender roles in these areas. These factors contribute to a complex matrix of factors which affect women's overall empowerment and access to the resources necessary for agricultural livelihoods. This is further explored in the forthcoming sections.

FIGURE 3. LANDOWNERSHIP STATUS OF INTERVIEWED HOUSEHOLDS IN BHAGWANPUR AND FULKAHAKATI VDCs IN SIRAHA DISTRICT.



4. FINDINGS AND DISCUSSION

4.1. Irrigation Constraints and Water Availability

4.1.1. Climatic and ecological stress

Given the highly seasonal pattern of rainfall, agricultural intensification is heavily dependent on access to timely irrigation. Irrigation is necessary to both improve monsoon yields and cultivate dry-season crops such as wheat, mustard, maize and vegetables. This is all the more important in the context of perceived climate change. People's experiences of the past suggest that rainfall used to be very predictable – the rain would come on time and farming was easier. However, in the past few years, rainfall has been very unpredictable. For example, when fieldwork was conducted in 2016, there was no rainfall in the Central Tarai, including Sunsari district, at the time of seed sowing. People waited for rainfall, and as canal water was also released a bit late, paddy cultivation was delayed. The cultivation cycle was extended for a few weeks in both districts, which affected productivity.

One of the informants, a male from Ekamba VDC, Sunsari district, talked about turbulence and changes in agricultural patterns during the past 25 years. According to this respondent, farmers these days mainly harvest only paddy and lentils (*masur, tisi, khesar* and *phasal*) due to climatic stress. Aside from extended dry spells, even during the monsoon, fields are often found to be *matilo* (wet) when they are not supposed to be, such as during the wheat harvest. One farmer explained:

“Last year, I tried sowing wheat, but I had to bear loss. In this village, people do not have awareness to check soil life and conditions. There is an agricultural center in Itahari, but people do not go there for soil checks. Also, these days, we do not use organic fertilizer, such as cow dung and excreta from other animals, because people use cow dung for fuel as they make dung cake, or goitha, out of it.”

This quote also reflects other stresses on agriculture, including the dependence on fertilizers. This has also contributed to low soil quality, while production costs have increased. The local people's perception of change regarding unpredictable climate corresponds with several studies conducted in the region. For instance, large floods have increased and prolonged dry spells have occurred during recent decades (Bartlett et al. 2010; Sharma 2009). A study conducted in Nepal by the Water and Energy Commission Secretariat (WECS) also showed that an increase in intense precipitation over recent decades has been paralleled by a lengthening of dry spells (WECS 2011). This was also evident in these districts.

4.1.2. Access to irrigation

Access to irrigation remains one of the most critical constraints for farming in the region, particularly to maintain yields at a time of ecological decline and unpredictable rainfall. There is a significant difference in agricultural outcomes between villages with access to

canal water and those dependent on groundwater. Canals are a common resource that provide water at a minimal price, while groundwater requires capital investment in a pump set or tube well, not to mention significant variable costs for the actual pumping of water. In Ekamba VDC of Sunsari district, for example, water for irrigation was not seen as a problem as it was relatively close to the head of the Sunsari-Morang canal network (see Figure 4). In contrast, with Amaduwa VDC being at the tail-end of the canal, water dries up on its way there and as a result yields are lower. Furthermore, people of this locality do not have access to subsidies for groundwater irrigation facilities, as it falls under the IWRMP canal management program.

On the other hand, in both the sites of Siraha district, there is no canal and a majority of the households are dependent on groundwater irrigation for agriculture (see Figure 5). However, comparing the two sites, farmers of Fulkahakati appear well off compared to those in Bhagwanpur when it comes to the availability of, and accessing subsidies for, groundwater irrigation facilities. In Fulkahakati, a majority of the farmers have been able to access these facilities through initiating farmer groups that are very active in this village. This institutional landscape, however, is not present in Bhagwanpur.

Pertaining to the ownership of irrigation technology, out of 24 households in Siraha district, 12 reported that they had their own irrigation facilities, such as pump sets, boring sets or hand-operated tube wells. Fifty percent of these households did not have their own means to lift water to their fields. They were mostly dependent on either shallow or deep tube wells installed by the GWRDB and Department of Irrigation (DoI), or they purchased water from the individual pump owners. The costs of the latter vary between NPR 200 and NPR 300 (USD 1.80 to USD 2.70) per hour, representing a considerable expense. In Sunsari district, only 10% of the households had equipment, but access to canals meant that it was not always necessary.

The insufficiency of agricultural production due to climate change, and constraints in accessing affordable irrigation water have compelled local people to adopt other means of sustainable livelihoods and leave the land fallow. Among many people, one of the best alternatives is temporary migration. The trend of out-migration of males to neighboring countries, such as India or the Gulf countries, has increased considerably in recent years.

4.2. Gendered Inequality and Empowerment in the Context of Change

4.2.1. Gendered division of labor and resources

Given the current demographic changes and abrupt climatic conditions affecting agriculture, gender relations in the sector are in transition. Historically, gendered division of labor has long been highly unequal in Sunsari and Siraha districts. In farming-related fieldwork, the roles of men and women were clearly marked.

FIGURE 4. WATER BEING RELEASED INTO ONE OF THE BRANCH CHANNELS FROM THE SITAGUNJ SECONDARY CANAL DURING THE MONTH OF FEBRUARY (DRY MONTHS).



Photo: Fraser Sugden.

FIGURE 5. GROUNDWATER IRRIGATION IN FULKAHAKATI VDC IN SIRAHA DISTRICT. PUMPING EQUIPMENT AND SHALLOW TUBE WELLS CAN PROVIDE WATER ON DEMAND DURING DRY SPELLS, BUT INVOLVE CONSIDERABLE INVESTMENT.



Photo: Fraser Sugden.

For example, women carried out activities such as transplanting paddy (*ropne*), and sowing and harvesting (*katne*) of paddy or wheat, while men would be engaged in plowing and transporting the raw paddy bundles collected. In addition, irrigation of the field was solely the work of men. However, currently, these roles are in transition due to male out-migration. In addition to reproductive work, women seem to be increasingly taking on activities which were once the male domain, such as marketing and managing irrigation.

Data also points to other aspects of gender inequality, especially in terms of wage payment. For men, the daily farm wage was NPR 500 (USD 4.50), whereas women were paid NPR 300 (USD 2.70) a day. Further, a skilled male worker earned as much as NPR 700 (USD 6.30). In terms of food supply while at work in the field, men would receive food (breakfast, lunch and dinner) provided by the family for whom they worked. Also, at times, male workers were provided with liquor as an 'energy' drink. However, in the case of female workers, they were expected to manage the food by themselves. Female workers suggested that they would first prepare their food. They would have breakfast and keep their lunch ready, and then start their work at around 8 am in the morning. They would take a break at around 12.30 pm for lunch and go to the field to work again until it was dark. However, differences in payments and food supply were internalized by women, as suggested by one female respondent in her 50s: *"Ladies do not eat while at work. Men are men, of course. They have to be engaged in hard labor, while ladies' work is relatively easy."*

The 'acceptance' of gendered inequalities was, however, changing, as also demonstrated by a *Tharu* woman from Amaduwa VDC, who felt that there were still avenues for greater empowerment in the context of rising education, although she was aware that barriers remain: *"Although women work more than men, they are far behind compared to men. Gender differences are due to the community and society. If women go further ahead than men, society cannot bear this. If a woman works outside, society thinks there is something odd about her. Men have freedom. I don't think equality is possible in rural areas, but there can be equality in the cities. Educated women are financially secure. Informal education has also helped them to talk and be forward. I am educated and feel empowered, but society creates barriers. This makes me disappointed sometimes. Even if a woman is educated, she will be confined to inside the house."*

A *Tharu* woman from Ekamba VDC noted their growing frustration: *"I wish I was a son. A woman's life is a misery. They have a bigger workload. Sons are free. I work staying far away from my home, and villagers doubt me, but I am there to earn money in an honest way. Our community misinterprets women's role and work. They think women cannot work outside. I even wanted to apply for a police job and people discouraged me, saying that I will die. Women are weak and more backward than men because in some cases they themselves feel demotivated, while at other times, society creates barriers. Weaknesses or mistakes of men are ignored, but society keeps eyes wide*

open on every activity of women. Women are not unequal, but society makes them unequal."

These quotes indicate contrasting definitions regarding gender roles. They are constructed within sociocultural expectations and experiences. This leads to a situation where women accept societal norms, although there appears to be a growing tendency for women to directly challenge them. Furthermore, the quotes show how boundaries are clearly defined in terms of outside and inside work for men and women. Women's engagements in the public sphere and in non-farm activities are looked upon with suspicion and uneasiness. Interestingly, these boundaries are stretched further whereby labor migration outside the village and community is largely seen as the domain of men.

4.2.2. Migration and its impacts

According to the 2011 census, 26.3% of households in the Eastern Tarai report an 'absentee' member in the family (CBS 2012). This is considerably higher if one takes into account unreported seasonal migration (Khatiwada 2014). A study conducted by the International Water Management Institute (IWMI) in Dhanusha and Morang, which adjoin Siraha and Sunsari districts, respectively, found that the proportion of households with migrants were three quarters and one-third, respectively (Sugden et al. 2014). Migration to the Gulf countries is by far the most prominent, accounting for 61% of the migrants from interviewed households in Saptari and Dhanusha in a separate IWMI study (Sugden et al. 2016).

Migration patterns in the study sites show a similar trend (Tables 1 and 2). The household data suggested that the migration rate was relatively higher in Siraha district compared to Sunsari district. In Siraha district, all the 24 interviewed households were found to have had a family member migrate. In Sunsari district, out of the 24 interviewed households, 18 were found to have at least one migrated family member.

Increased workload was one of the most significant challenges faced by families from which one or more members had migrated. One woman from Amaduwa VDC became head of her household in the absence of her husband. She explained, *"My workload has increased. I have to perform the role of my husband too. I feel it is hard to do heavy work like maintaining the tube well or cutting bamboos. I feel it is hard to make decisions alone. Before, we used to decide together and also used to go to the market for purchasing goods together."* Women's labor contribution was particularly high in Siraha district, where families were engaged in vegetable cultivation.

In some cases, women's workload remained under control despite the out-migration of men, particularly when they were able to hire outside labor for key agricultural tasks. Data from Sunsari district revealed that, out of a total of 24 households, 16 employed outside laborers. Similarly, in Siraha district, out of 24 households, 17 employed external laborers. The laborers were predominantly women, not men, and eight households employed only women laborers.

TABLE 1. CHARACTERISTICS OF MIGRATION IN SUNSARI DISTRICT ACCORDING TO HOUSEHOLD INTERVIEWS CONDUCTED.

SUNSARI DISTRICT		NUMBER OF MIGRANTS
Type of migration	Long-term (usually overseas)	17
	Seasonal	1
Age group of migrants	21-30	10
	31-40	4
	41-50	7
Marital status of migrants	Married	13
	Unmarried	8

TABLE 2. CHARACTERISTICS OF MIGRATION IN SIRAHA DISTRICT ACCORDING TO HOUSEHOLD INTERVIEWS CONDUCTED.

SIRAHA DISTRICT		NUMBER OF MIGRANTS
Type of migration	Long-term (usually overseas)	24
	Seasonal	0
Age group of migrants	21-30	11
	31-40	10
Marital status of migrants	Married	22
	Unmarried	2

Relatively wealthier households have been shown to invest more in labor from outside the family unit to the point that women can even withdraw from agricultural work and focus on reproductive labor (see also Sugden et al. 2014), suggesting that the economic status of a household influences what adaptation pathways can be used to cope with demographic stress. However, the fact remains that the rate of migration is often highest among poorer socioeconomic groups, and thus the rising work burden is a reality facing a majority of households. An earlier IWMI survey also showed that, in Dhanusha and Morang, 83% of female-headed households (predominantly due to migration) were in the landless laborer or tenant category or owned small plots of land less than 0.5 ha (Sugden et al. 2014).

In this context, the rising women's work burden appears to particularly affect poorer socioeconomic groups. However, there are alternative coping strategies. In one instance, a woman from Fulkahakati VDC noted how she worked for others and in return received labor on her own farm, and managed her agricultural work in this way so that crops could be harvested on time. This strategy – a de facto 'exchange' of labor, particular to this culture – was helping some women to cope with the labor deficiency.

The degree to which the work burden is shouldered predominantly by women or the level of dependence on outside workers also depends on the support offered by the extended family, particularly in-laws. For example, a woman from Ekamba VDC argued, *"There are positive aspects to migration, but the migration of my husband has also brought about other difficulties. Especially in a patriarchal society like ours, life is not that easy for a married woman when her husband is not with her. ... The situation is not the same as it used to be when my husband was with me. When we were together, we would do everything together, and as a result work would be done very easily. Now, it is too difficult for me to carry heavy loads from the market. If any hard work is needed, I have to call my father-in-law. Sometimes, I feel, I am troubling my father-in-law. But if I face challenges, I obviously have to seek help. My father-in-law takes care of all the agriculture- and cultivation-related activities. I do not have to do any agricultural work. He manages everything by himself."*

For women who lack support from the extended family and are unable to hire laborers, another option they have is to abandon agriculture entirely or lease out their land. A social mobilizer from a government agricultural program explained, *"Due to migration, the effect on agriculture is not the same everywhere. In some places, women are working in agriculture and managing everything by themselves, but in other places, they have stopped doing agricultural work. Usually, women whose husbands have migrated and are left with small children and old parents are leaving agriculture. The women with grown-up children are continuing to work in agriculture with their help. In some cases, women are also engaged in irrigation-related activities. In the places where they use agricultural labor, there are problems with hiring laborers."*

In sum, it is clear that participation and empowerment of women in the agriculture sector are changing slowly. While women are taking on formerly male roles and breaking gender norms, their workloads are often increasing. Women have a degree of agency, for example, by choosing not to cultivate the land, reducing cropping intensity or hiring labor. However, in the absence of a male family member, it becomes an obligation to take on an increased labor burden, particularly if food security is a concern.

4.2.3. Access to economic resources, enterprise opportunities and empowerment

4.2.3.1. Microfinance and enterprise opportunities

Apart from changing demography and successive adjustment in the family in terms of labor roles in additional agricultural work, participation and empowerment of women are also influenced by women's access to economic resources and increased opportunities for entrepreneurship. In this context, it is important to note that despite significant increases in workload and greater hardship faced by women due to male out-migration, women's access to economic resources has risen considerably compared to the past. These opportunities are transforming livelihood options and gender relations at a time of agrarian stress. Faced with a crippling work burden, many women perceive education and financial security as the way to achieve greater equality.

Different types of enterprise activities are carried out by women, including small tea shops with most of the customers being male. Production of liquor was also a popular enterprise opportunity for women. Some women of Amaduwa VDC, for example, prepared 10-15 bottles of wine in a day and sold them at a cost of NPR 50 (USD 0.45) per bottle. The periodic market, or *haatiya*, was an important place where women engaged in business to sell and buy agricultural produce, liquor or snacks. It is striking to note that 90% of the vendors in the *haatiya* were women. Therefore, women's participation and empowerment are constantly being negotiated, not only in the households, but also in the public sphere, and financial activities are seen as mediating these changes.

An important catalyst to this change is the rise of microcredit programs in recent years. In Amaduwa VDC, some female respondents were engaged in three or four microcredit initiatives. Although microcredit can lead to an increase in indebtedness, with loans being put to unproductive uses (Sugden 2009; Shakya and Rankin 2008), it was a significant change that has increased women's access to and control over cash. One of the female respondents reported how her situation at home had changed after being a member in a microcredit and saving program. She stated, *"My husband was previously an alcoholic, but the microcredit loan has compelled him to work and save. Now, he spends more time working because we have to pay the loan in time. We used to fight earlier, but now both of us are engaged in economic activities. This has changed our behavior, which is towards progress."*

4.2.3.2. Benefits of financial empowerment: Consumption and access to land

Considering the intersectionality that exists between space, normative gender beliefs and individual practices within the culture and society, it is not clear how participation in markets and access to cash specifically help in guaranteeing that social opportunities transform into empowerment, although certain circumstances seem crucial. Interestingly, there appeared to be a trade-off between different types of 'empowerment', whereby women strongly valued access to finance and the possibility of having land in their own name, even when this contributed to an already high workload.

The reasons were multifold. Improved quality of life through improvement in livelihood is seen as a compulsion of the global market economy and the growing consumerist values that it brings with it. The desire to purchase imported consumer goods, driven in part by the migration economy, seems to be a triggering factor, as does an interest in investing in the education of children.

For example, *Chandramukhi Samuha* is a microfinance initiative operating in Amaduwa VDC that encourages rural women to save in monthly installments. One member talked about the empowerment that was taking place among women due to rising cash transactions. She suggested that this empowerment was infused by the desire to have money, educate children in private boarding schools and earn land as a resource for long-

term livelihoods. This is, in part, likely to be connected to a culture of consumerism and competitive entrepreneurship across Nepal, which has taken off in the context of two decades of neoliberal restructuring – and with which the expansion of microfinance is intricately linked (Sugden 2009; Rankin 2001, 2004). The group member went on to say: *"Everybody in the group works competitively. Whatever work they can do, they are engaged in, including making liquor, keeping roosters, rearing animals including buffaloes, goats and others – or if there is daily wage work in the village, they do that too. 'Sab Jiddha – Jiddhi main kambai chhai' – it is about earning in competition with one another. But from this village, Tharu women hardly go to Biratnagar for work."*

This respondent had bought a few *katha* (1 *katha* = 0.034 ha) of land in her name. Sita got some money from her husband, who worked in Biratnagar as a construction worker, and the balance she received as a loan from a microcredit bank. She sold one buffalo, combined the money and bought 2 *katha* of land. She happily expressed that her husband himself allowed her to have land registered in her own name, as an acknowledgement of her hard work. As land was registered in her name, they paid less tax, as per a government provision to encourage female landownership. She farmed 25 *katha*, of which she owned 8 *katha*.

4.2.3.3. Decision-making power

Respondents also indicated that greater financial independence also generates benefits that are not strictly economic in nature. Women's access to cash has increased their decision-making power within the household. For example, one woman was asked about the guardian of the family. She replied, *"Both of us [she and her husband] are the guardians of our house."* She went on to say, *"Right now, women are more forward than men as they are involved in saving and credit activities with different saving, credit and finance institutions."* Most of the women in the village suggested that, on average, they maintained at least NPR 15,000-20,000 (USD 135-180) of savings in a year. The men and women both worked together to clear the loan.

Education and training activities by nongovernmental organizations (NGOs) have also contributed to encouraging women to engage in economic activities, increasing their confidence to assert influence within the household. One respondent in Sunsari district described her learning experiences while being a member of the management committee of an early childcare development center. She said, *"I took part in various types of training. At times, I left my daughter at my mother's place and participated in the training. Trainings were mostly provided by international or local NGOs supporting childcare centers in the district of Sunsari."* She recalled, *"I am outspoken, so I got selected by women in the village as a member of the management committee. While being in the committee, I was provided with various trainings, including first aid and training on upgrading the quality of education in the school."* She recalled that from the training, she saved money and purchased *paijo* (ornaments that women tie to their ankles). *"It was at this time that I started thinking that*

if I get engaged in earning, I would be able to contribute to the family's livelihood. I will have the capacity to decide over my own needs, and I can spend accordingly. Saving from the training gave me confidence and hope that I can do a lot more and earn. A saying, previously mentioned by women in the village became a reflective ground."

This respondent's personal story also emerged from a period of isolation, following a 'love marriage' not accepted by the in-laws, whereby her economic activities would gain her space within the family. She had a long-held interest to open a shop. Therefore, she first started collecting goods from Jogbani (India) and delivering them to the shops in the local market. Later, she realized that she was not receiving enough commission and that the job entailed risk, so she decided to open a grocery shop in the village. She asked her migrant husband to return home from Malaysia for a holiday and used his help to set up the shop, as gaining her husband's approval would be the only way she could achieve the agreement of her in-laws.

These narratives explicitly indicate transitions in gender role and the way in which several factors influence the participation and empowerment of women. These changes range from making decisions on harvesting to deciding on purchasing land and initiating new small enterprises for income generation. Therefore, it is not only women having access to water resources in irrigation and agriculture, but also several other factors, such as engaging in income-generating activities, that strengthen women's participation and empowerment within the household and beyond.

There were similar transformative changes in Fulkahakati VDC of Siraha district, where a large number of women were found to be engaged in vegetable farming and this had increased their mobility and access to the commercial market. One woman whose husband was a migrant stated, *"I go to the market by myself to sell vegetables. I often use a bicycle to carry vegetables or even carry it on my head to the market. When I have a heavy load of vegetable products, I take a tempo (autorickshaw) to transport vegetables to the market. I take them to Mirchaiya, Chauharba, Golbazaar, Zero mile and Chainpur. Usually, vegetables can be sold for good prices in Mirchaiya, so I prefer going there rather than other places."*

It appears that the desire to engage in income-generating activities, coupled with the out-migration of men, had exposed this respondent to numerous challenges and opportunities. Rather than viewing vegetable production and trade as an extended work burden, she viewed it as a challenge as well as an opportunity to contribute to the livelihood of the family. This view was shared across the board – that this ultimately stimulates women's capacity and confidence, leading to their empowerment.

Deciding how money is spent is particularly valued by these female entrepreneurs, as noted by one woman in Ekamba VDC. She has a business of buying and selling agricultural produce. When it is the season for vegetables, she takes vegetables to the market, and when it is the season for rice grain, she trades rice. When a researcher spoke to her in late 2015, she explained: *"Today, I earned*

NPR 800 (USD 7.20) in a morning shift. In fact, I collected 300 kilograms (kg) of rice from the village and transported it to Itahari market on demand and earned NPR 800 instantly. It is about money. If you have money, you can do what you like, at least in terms of material needs. This gives assurance and confidence that you can take care of your needs. Especially in this Tharu community, there is not much difference in terms of men and women." While joking, she exclaimed, *"These days, women are capable enough to even beat up men if they require to do so. Women are equal enough to protect themselves, if needed. 'Sain betake kamai me hisabletau, Apankamai me jena mon tena' – If you are dependent, and your husband and son earn money and give you, they would always ask for a balance sheet. But, if you earn by yourself, you can decide where to spend the money. That gives individual freedom. You can choose how you spend."*

These shifts in gender roles were visible in other communities as well. Among the *Dalit* community of Bhagwanpur, women's access to cash had increased through their engagement in vegetable production cooperatives via lease farming, although this was initiated through a project funded by an international NGO. A *Dalit* woman from Bhagwanpur presented herself with confidence when asked about lease farming and the functioning of the *Dalit* women's group. Since she was also the president of the group, she had the opportunity to participate in various capacity building trainings that were designed for the group members. She explained how, after being engaged in lease farming, the group had encouraged her to stand in front of people. She said, *"Previously, if men would have come to talk to us, we would not face them. Rather, we would turn our faces and feel embarrassed. But, now I can face them and talk to them regarding lease farming, and the challenges and opportunities that it has brought us."* Another woman added: *"See how close I am sitting to you? This is the change, really. Previously, if I would have seen you, and even if you would have called me to talk, I would have rather run away."* She repeated, *"This is the change, apart from all other benefits that we are getting from vegetable farming. It is a lot for us."*

The vice president of Bhagwanpur's *Dalit* also shared: *"Since I am involved in lease farming, I am able to earn money. Previously, I had to go to others' fields as a wage laborer. But, now I work on the land that I have leased for farming. I grow vegetables in all seasons and sell them in the local market. This has contributed to continuous income. Now, I will always have some money to spend on what I would like. Practically, this changed situation has allowed me to think about how to spend money and think freely. This is empowering, I can make a decision now."*

These narratives give a glimpse of the subtle changes underway in Tarai-Madhesh society. When these women were talking about "standing in front of men or people," they were indicating how they were becoming equal. In a deep sense, they were talking about how a culture of silence, embedded in the society, was broken. In this sense, it was confidence and a feeling of equality, which might relate to empowerment, a by-product of a changed economic context.

Both migration and financial empowerment had contributed to women's improved decision-making power. The interviews of female-headed households indicate that the absence of a male family member is pushing women to take initiative and make decisions; otherwise, they would have left such actions to their male partners. All 48 interviewed households in Siraha and Sunsari districts indicate that more women are engaged in decision-making processes. In several cases, even when male members were present in the family, women acted as a de facto head of household. It can be argued that, to a large extent, women's engagement in income-generating activities has given them an edge over men, driven in part by male out-migration.

4.2.4. Remittances and empowerment

Remittances themselves have also played an important part in improving women's financial empowerment. The household interviews conducted suggest that remittance money is mostly spent on daily household needs. Figures 6 and 7 show the average share of migrant remittances spent for different purposes during the years 2015-2016 among the interviewed households. From the data, it is evident that expenses for food are followed by payment for children's education in both villages of Sunsari. Debt servicing consumes the largest share of remittances in Bhagwanpur of Siraha. The repayment of loans taken to pay middlemen and facilitate the migration process was significant. Other daily needs that absorb a large portion of remittances include healthcare, house maintenance or renovation, and marriage/dowry payments.

While these expenses do not directly lead to women's financial empowerment, they support the food needs and other running costs of the household, giving women who stay behind greater scope to use alternative

income sources (e.g., from small enterprises or crop sales) as they wish. The high investment on education in Ekamba and Amaduwa is also significant. The shift toward nonagricultural income sources has encouraged investments in the education of the younger generation to strengthen household livelihoods in the long term.

However, there are some instances when remittances are directly invested in agro-enterprises run by women. In Fulkahakati, households set aside a significant portion of their remittances to purchase land (see Figure 7), which could possibly have been spurred by the boom in vegetable production. In Sunsari, remittances were also saved and invested in micro-enterprises. In Bhagwanpur in Siraha district, however, these 'productive' uses of remittances are far more limited.

One woman from Ekamba VDC shared some positive results brought by remittances. Her husband worked as a plumber in Saudi Arabia for one and half years. *"Since my husband started working overseas, he has been sending money every month. We could clear all our loans. Our roof has been reconstructed. My sister-in-law is studying in a private boarding school. Most of the girls and boys go to the government schools in our village, and they do not progress to higher education. But, from the remittance money sent by my husband, we are able to provide quality education for my sister-in-law. This money is contributing a lot to our livelihood, and we also have savings in the bank."*

The injection of remittances into the community has played an important role in undermining caste hierarchies, with a positive outcome for women who stay behind, particularly as families had new more lucrative income sources for men beyond those stipulated by the caste-based division of labor. The *jajmani* system, in particular,

FIGURE 6. AVERAGE SPENDING OF REMITTANCES (PERCENTAGE) BY CATEGORY AMONG INTERVIEWED HOUSEHOLDS IN SUNSARI DISTRICT.

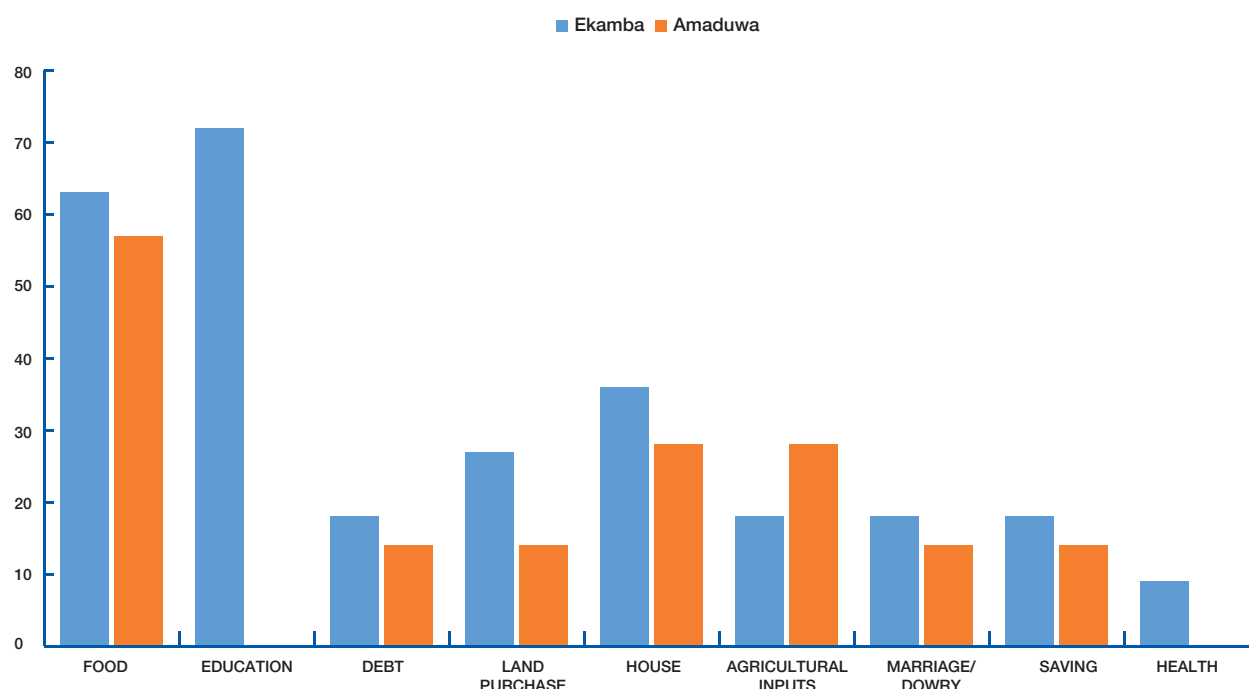
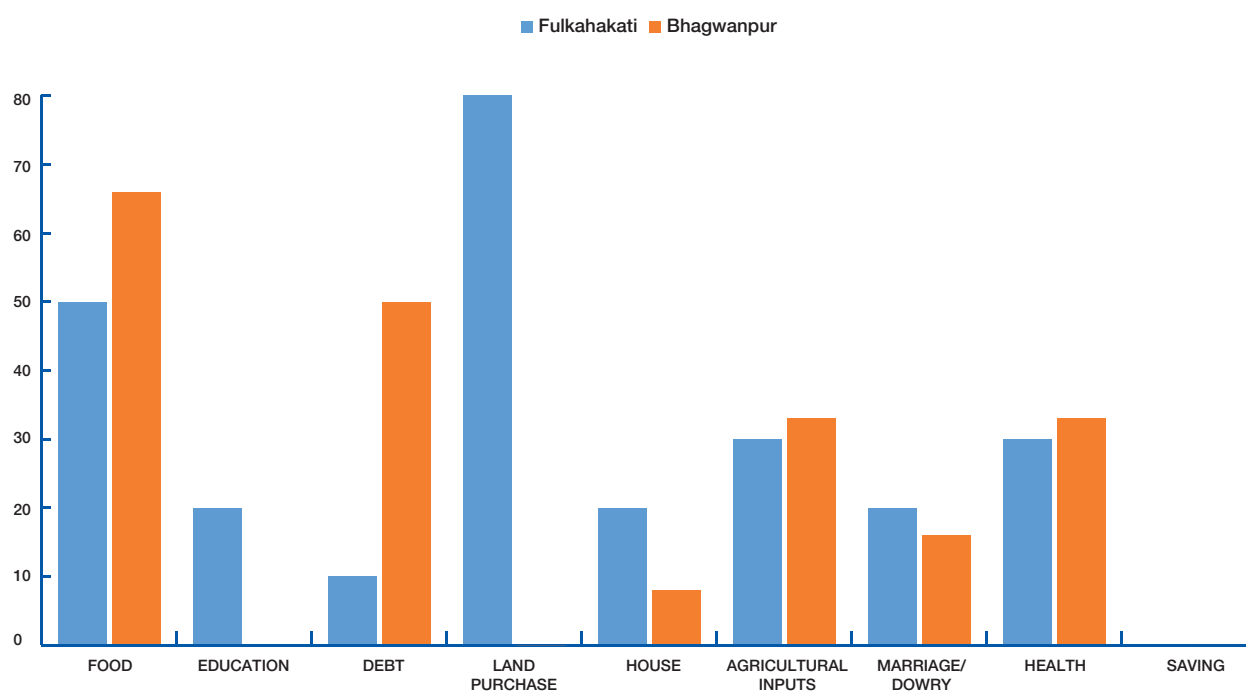


FIGURE 7. AVERAGE SPENDING OF REMITTANCES (PERCENTAGE) BY CATEGORY AMONG INTERVIEWED HOUSEHOLDS IN SIRAHA DISTRICT.



where people of lower castes would do particular jobs for those in other higher castes in return for grain, had died out. Among many such cases, a woman in Siraha district from the *Ram* (*Chamar* – or ‘cobbler’) caste presented an extraordinary narrative that related how remittances could challenge caste and gender ideologies. The respondent stated that now they did not call themselves “*Chamar*” or “*Mochi*” but kept the preferred title of *Ram*, and had mostly abandoned their traditional vocations of carrying and managing dead animals, assisting lactating women to deliver babies, and providing post-natal massages to mothers and newborn babies, as well as their traditional role as musicians during ceremonies. She argued that she feels empowered. Now, the men in her community do not continue with the work they did in the past and what their ancestors did. They see it as empowerment and suggest that now, if an animal dies in other caste groups, the family members themselves bury the dead animal.

The respondent also noted that “*Even Yadavs (a more dominant middle caste group in the area) have to load their dead animals on a tyregada (bullock cart) by themselves, dig the hole and bury the dead animal. However, in earlier days, these Yadavs would order us to manage their dead animals, and if we would resist they would abuse us. We used to do this menial work and they gave us grains in the harvesting season. They never gave us grains equivalent to the labor we provided. This used to work within a system of jajmani.*” She contemplates, “*Changes in the power structure have been possible only since our people started to go to ‘bidesh’ (overseas) to earn money. We have slowly abandoned our traditional vocation, which was seen as polluting. We could do it only because now we do not have to be dependent on these jajmanis (jobs stipulated by jajmani system) for livelihood purposes. With the remittance money, we are able to sustain our*

livelihoods. Now, if they ask for assistance, we demand money for it and they are forced to pay the amount stated.”

The tone and body language with which this woman narrated her story indicated how she felt a sense of relief. Once remittance money started coming, she could abandon the occupation that labeled her untouchable for generations and isolated her from others in society. Male out-migration and the remittance economy have made it possible for women from marginalized castes to not only negotiate their social position but to also decide what they wish to do, regardless of social stratification. Ultimately, these changes are getting translated into everyday practices in the rural villages of the Tarai, influencing engaged participation and empowerment perspectives.

4.2.5. Equality, opportunities for economic empowerment and the role of class

While it is clear that a large number of households have benefitted considerably from new market opportunities spurred on by new enterprises or from remittances, not everyone has benefitted to the same degree and achieved the same levels of economic empowerment. Given that deeply entrenched caste and class inequalities exist in the Tarai, it is inevitable that economic opportunity is often rooted in a person’s position in the agrarian structure.

In both districts, a large number of respondents from the Dalit *Rishidev* and *Ram* communities felt that little had changed in their lives in recent years. These women were not involved in any groups or institutions, and the majority of this group comprised of landless laborers or tenant farmers. They noted that they perform all the household chores and are only engaged in labor work as tenant farmers. One woman from Bhagwanpur expressed, “*We don’t know anything. How can I say what is needed for*

us? We say one thing, but men say something else. We don't know what trainings are required for us. Educated people like you may know what should be done for us."

While there are positive examples such as the women's leasehold farming groups in Bhagwanpur, the coverage of these programs is not widespread. The research encountered a large number of women from low-income, often landless groups, such as *Rishidev* and *Ram*, who are not able to benefit from off-farm or agricultural enterprises to the same degree as others in the community. The reason they put forward is often limited access to microcredit institutions, as they do not have collateral to take a loan. Therefore, these women largely rely on labor work on farms.

For instance, a *Dalit Rishidev* woman from Amaduwa VDC reflected, *"It is very difficult to take a loan from microcredit institutions as they require collateral of some kind. At times, people from these institutions come and advise us on getting loans from them. But, when it comes to actually getting a loan, it becomes next to impossible. The problem is that even our houses are not registered in the land revenue office. We have our huts on public land. For example, I obtained a loan of NPR 50,000 (USD 450) from a microcredit institution for my daughter's marriage, while keeping buffalo as collateral. Now, I have to pay monthly installments of NPR 7,000 (USD 63). If I am not able to pay on time, they would come and abuse us in front of the public. We have no other option than to be subjected to this harassment, if we take a loan. I am the only one from this tole (neighborhood) to take a loan from a microcredit institution. People feel afraid to take a loan as it can cause trouble if they are not able to pay the installments. This limits the opportunity to think beyond daily survival."*

Of a total of eight households in *Rishidev tole*, only one woman had taken a loan, and that was not for any income-generating activity, but for marriage. A worker at a local microfinance bank also agreed that a loan cannot be granted to an individual without collateral. Thus, it is clear that although economic empowerment of many women has risen considerably as they find new enterprise-based opportunities and manage finances while their husbands are abroad, not all households are able to benefit from off-farm enterprises to the same degree.

Access to financial resources is also grounded in a person's family arrangement, distribution of cash and decision-making authority within the household. This is most notable when it comes to control over remittances. If they are married, migrants send money mostly addressed to their wives in cases where the wife is the head of household. However, if the wives are living within an extended family, the remittance money is often addressed to their father-in-law, who leads the family – and control over this income by women can be limited. Out of 18 interviewed households who were asked about remittance decision making, only eight actually made decisions on how remittances were invested.

One woman's story gives a glimpse of how remittance money is spent, how decisions are made and some of the

assumptions needed to negotiate. This woman's husband is a migrant in Saudi Arabia. This was her husband's second trip there. Earlier, he had spent 5 years in Saudi Arabia, and this time just 3 months. In the afternoon, during leisure time, the respondent in question was found playing cards. She looked happy and well dressed. When the researcher asked what she spends the remittance money on, her older aunt interrupted before she could respond. *"You do not see? Where will she spend money? Of course, on fashion!"* the aunt said while pointing at her niece. Other women playing cards started laughing, but later the respondent replied that a large amount of the remittance money is spent on the education of her son.

Remittance money also brings conflict to the households. One possible way to manage these conflicts is for women to separate themselves from their in-laws and create a nuclear family. Such a smaller unit would manage their own finances, food and agricultural land. One woman in Ekamba VDC stated that she started cooking food separately from her in-laws one month ago. Now, she is the guardian for her small son. She recalled, *"About a month ago, I told my in-laws about us getting separated (splitting from the extended family). I have a separate room where I prepare food. I, myself, made this decision and my husband supported me. Due to family matters, I had to make this decision. My in-laws wanted to have all the remittance money sent by my husband, and they did not discuss how this money should be spent with me. But, I have to also think about my son's future. My husband sends remittance money in my name. In this way, I can use the money wisely and save some for our future. My husband has always accompanied me in my decisions."*

However, other family members did not respond well to her being separated from the extended family. The respondent explained, *"When I told my parents-in-law about separating, they could not speak directly to me. But, I could understand that my father-in-law was feeling bad. My parents were also very angry about my decision. My older brother shouted at me and even warned that he would never visit me. I shared everything with my husband. He was very positive and convinced me that others would understand and be nice to me eventually."* The noticeable difference is that now Kumari has more control over her husband's remittance money and she feels empowered.

However, remittances themselves are not equally available to everyone. A wide range of jobs are carried out overseas, with a hugely variable pay scale. Past work has shown how migrants from better-off households often find better paid employment due to access to improved social networks and higher levels of education (Sugden et al. 2016). There were reports of migrants returning without being paid. Of course, the story of men migrating abroad for work is not always positive.

One woman from Amaduwa VDC recounted how her husband's migration has not only increased her workload, but also ruined the happiness of her family since her husband is having an extramarital affair in India. Now, she has to work hard to sustain her family and educate her

children. She shared her story: *"We bought land, a thresher machine and a generator with a loan. My husband went to India to earn money so that we could pay the loan, but he married another woman in India. Earlier, he used to send us money every 10 or 15 days, but now he does not. I have to manage everything by myself. I do wage labor and also sell milk. I use my bicycle to go anywhere I need. My earnings are all spent on the household – on food, clothes and education of the children. Last year, I sold one cow and goat to pay the loan. This year, too, I am planning to sell some of the five cows we own."*

Indeed, she is living independently and is determined that she will educate her children, even though her husband is not with her. This story sheds light on the risks, challenges, opportunities and hope that people adhere to in terms of migration.

4.3. Gender and Access to Groundwater

From the discussions in the previous sections of this report, it is clear that remittances as well as access to credit and markets have in many ways transformed gender relations in Siraha and Sunsari districts. However, aside from the few success stories, such as the women vegetable farmer groups in Siraha district, gender empowerment within agriculture appears far more limited, despite women increasingly being in charge of agricultural production. It is crucial to note that regardless of various economic opportunities for women in the non-farm sector, such as micro-enterprises, households still depend on agriculture to fulfill a large portion of their minimum subsistence needs – in particular, to ensure food security. Furthermore, as noted above, not all women had the same access to economic opportunities as others, with structural constraints to accessing credit or even remittances.

In addition, one of the most critical challenges for livelihood security through agriculture is lack of access to water. This was repeatedly confirmed by informants in the field. Irrigation-related work is seen as 'masculine' and therefore women hardly get involved in irrigating fields, except to work as a subordinate. Women whose men have migrated suggest that when it comes to irrigation, they are largely dependent on their close kin, such as their father-in-law or brother-in-law. To some extent, this affects farming in female-headed households. At times, these households hire male laborers to meet irrigation needs. Groundwater irrigation requires some labor, particularly when it comes to setting out the pipes and transporting the pump. At the study sites, one could see different households transporting their pumping sets to the field, either on a bicycle or in a *thelagadi* (hand-pushed cart). Additional equipment such as pipes would often be carried by hand and could weigh up to 30 kg.

On several occasions, these female-headed households are supported by close male relatives only at the end of the planting season, because those who provide support would irrigate their fields first. This can result in a delay in planting paddy and can negatively affect yields. In this context, female-headed households sometimes keep a large share of their land barren.

The constraints that keep women from having easy access to irrigation in groundwater-dependent communities are complex. The primary challenge is accessing a pump set and tube well, particularly for poorer farmers who do not own their own land or pumping equipment, as also highlighted by Sugden et al. (2014). Traditionally, men would be responsible for negotiating with a richer neighbor to rent a pump. However, for households with no adult male members, the task of finding a pump set for irrigation is increasingly falling into the domain of women.

In the case of Amaduwa VDC, for example, as an alternative to surface water, a few farmers had invested in a pump set and tube wells to irrigate their field. A woman who was the head of her household shared her experience of irrigating her paddy field: *"This year (paddy plantation time), we had a drought for 3 months. The government did nothing to help farmers. I faced a lot of obstacles in paddy cultivation. Finally, I decided to buy a pump set for NPR 20,000 (USD 180) and I spent NPR 6,000 (USD 55) for a motor. It is costly to do farming on just 2 bighas (1.5 ha) of land, and if I add the fuel cost, it becomes very expensive. I could do it only because my father-in-law took the responsibility for bringing pumping equipment from India and he helped me find a skilled worker to fix the pump set. Finally, I could irrigate my paddy field."*

As expressed above, men would traditionally be responsible for this job, but in this case, a female-headed household depended on support from a man to procure and install irrigation equipment. However, in families where no men were present to provide support due to labor migration, women had to take this initiative. One woman informant from Amaduwa VDC, who received limited water from the canal, complained: *"For agriculture, there is no irrigation water. We have to depend on water from boreholes, which I buy from others. I have to pay NPR 70 (USD 0.60) per hour and the fuel is also costly. Before migrating, my husband used to oversee irrigation and arranging a rental pump. But, now I have to spend extra time to manage irrigation in the field. My husband used to also do the plowing and sowing. But, now I need to hire laborers and tractors for these tasks. Sometimes, I ask for help from my father-in-law to sow the field. But, it is not as easy as it seems. Sometimes, I have to call four or five times. If he doesn't come, I have to do it by myself."*

Similarly, another woman from Bhagwanpur village, Siraha district, complained of the delays she faces in accessing pumping equipment: *"We use a machine – an electric water pump. These two women (referring to her friends present at the time) have their own pump sets, and others have to rent the equipment. Usually, it is difficult to find a vacant pump set for rent during the peak season. Earlier, my husband would go to find a pump set for irrigation. But, as he is not around, I have to go and find a pump set. We have to provide fuel and give cash to the pump owner based on an hourly rate that is NPR 150 (USD 1.35). What to do? It is difficult; it disrupts my other work in the house."*

In Bhagwanpur, a large number of farmers worked as tenants on a landlord's farm, and women from tenant

households faced a double burden. These farmers belonged to *Dalit* communities, such as *Ram*, *Mushahar* and *Chamar*. Most of these farmers were landless. Since these farmers worked as sharecroppers, they did not have full control over agricultural production and irrigation was often out of their reach. When they did irrigate their land, they would usually have to hire the use of a pump set and tube well from a wealthier farmer or landowner, where they would need to pay not only the fuel costs but a 'rent' to the owner, which is usually far beyond the usual maintenance cost. A woman from Bhagwanpur village reported, *"We depend on agriculture for money. We work as tenants on the local landlord's land. We (all Chamar) are like refugees. I only have one small home on 5 dhur (16.93 m²) of land. There is no boring pump set on our land. We manage to irrigate from the landlord's borehole. The landlord has got a boring next to the land that I harvest. I hire a motor and pipes to bring water to our field. Farmers like us have many problems related to irrigation. Nobody does anything for poor farmers. Even the landlord, whose farm we cultivate, charges NPR 60 (USD 0.64) per hour for renting a pump set and extra for fuel. This is the reality."*

Another informant, who is also head of her household, shared similar experiences. She said, *"I am a tenant farmer and I rent a pump set for irrigation. However, I have managed to buy one motor. Since my husband is not here, I often face obstacles to irrigate the land. I call my neighbors to help me manage irrigation of the field, but assistance is not always available at the time I need."*

Furthermore, women need to have strong social relationships to get water from the pump rental market, and when the market is dominated by men, maintaining these relationships becomes difficult due to cultural factors. Negotiations to rent a pump set and tube well take place in the public sphere (teashops or other gathering places for men), which are not welcoming environments for women.

Another constraint for women engaging in the water market relates to the timing of irrigation. Many farmers who rent pumps irrigate their land on a rotation basis, and sometimes when it is their turn, they are required to irrigate during the night, which involves staying awake for hours. A technical assistant from an agricultural service center in Siraha also expressed the shifting roles of women in irrigation. He said, *"For irrigation, they (women) themselves carry motors on their heads, fix them to the tube wells, run the meters and irrigate their land. During nighttime, of course, there are security issues, but they collect two or three women and go to irrigate their field. While in a group, they can also defend themselves if any risk arises."*

Thus, from the narratives of female-headed households, it appears that access to water for irrigation remains an issue that requires constant negotiations at the societal level, where women still feel awkward about getting involved. However, given the change in family demographics due to migration and separation from in-laws, they are pushed to engage and negotiate, if required, in social spaces which

are not necessarily welcoming to women. Of course, with women's increased control over finances, they have been able to participate in negotiation processes and ensure their rights to gain access to water for irrigation. However, whether their bargaining power to receive water when needed and at an acceptable price matches that of their male counterparts remains to be seen.

4.4. State-led Irrigation Interventions: Do They Address Gendered Constraints?

A number of large-scale government irrigation projects in the study sites are focused on both technical and institutional interventions. However, it is important to question whether these interventions are improving access to irrigation, particularly for women. As mentioned elsewhere, there are two primary sets of government interventions: canal irrigation and shallow tube well installation.

4.4.1. Canal irrigation interventions

The IWRMP in Sunsari district is focused on the establishment of WUAs managed under the DoI to deliver irrigation facilities and services to farmers. Emphasis is on rehabilitation of the original Sunsari Morang Irrigation Project (SMIP) canals, and promotion of farmer management at a branch canal level.

The Sitagunj secondary canal that starts from Chatara on the Koshi River in Sunsari district covers a total length of 14.34 km, serving 7,985 ha of farming land. The canal runs across 10 VDCs in the southern part of Sunsari district, starting in Ekamba and concluding in Amaduwa, crossing Chandbela, Matheli, Aurabani, Simaria, Satarejhora, Chhitaha, Chimadi and Amahibela.

In the catchment area of the Sunsari-Morang project, the program is implemented by forming a water user group (WUG) at each tertiary-level canal and water user committees at the VDC level. These groups are consolidated at a district level as a WUA, a mechanism through which the irrigation scheme is implemented and managed. This is the model that seeks to transfer management of the scheme to the grassroots level. Technical support is provided by the SMIP. Tertiary canal operators, sub-engineers and engineers are put in place for day-to-day operation of the canal (pers. comm. interviews conducted with officials from the Department of Irrigation, Biratnagar, 2015).

4.4.2. Groundwater interventions

The government's groundwater programs have the potential to provide farmers with access to water through a WUG, preventing the need to rent a pump or tube well. In Siraha district, out of a total agricultural area of 71,011 ha, there is potential for groundwater irrigation of an area of 40,000 ha. To improve groundwater development and management within the existing GWRDB under the DoI's regulatory authority, a Groundwater Development Committee (GDC) was established in 1989. The committee in Lahan is working to provide irrigation facilities to the farmers in the area. Various irrigation programs have been implemented under different projects, including

Sagarmatha Arthik Gramin Bikash Yojana Shallow Tube-well Irrigation, and the Agricultural Perspective Plan (APP) deep and shallow tube well project. Other recent programs include the Community Groundwater Irrigation Sector Project (CGISP) and an Indian Embassy-supported deep tube well program. These programs are supposed to have irrigated approximately 22,384 ha of land (Singh et al. 2013; ADB 2015).

In Bhagwanpur and Fulkahakati villages, the GWRDB has been involved in implementing several of the above programs, while forming women's WUGs at each ward level. Farmers interested in a deep or shallow tube well in their area should submit an application to the local GWRDB office. Farmers of each ward form a user group to submit an application. Among the many applications received, officials from the GWRDB identify appropriate groups for subsidized provisions. These officials identify groups that can receive a free tube well based on the guidelines provided by the GWRDB.

4.4.3. Gender and institutional failures in canal irrigation

It is clear that the framework used to implement the canal irrigation strategy is complex. Many of the challenges with existing state interventions are not rooted only in gendered constraints, but in broader political and economic processes and institutional weaknesses in the implementation and design of programs. Various issues and risks related to accessing irrigation were explicitly voiced by the informants.

While a number of long-running problems persist, such as siltation and unreliable flows from the river, people claimed that water shortages in the canal are also aggravated due to non-functioning user committees formed under the IWRMP at an earlier time.

The chair of one of the WUGs stated that, *"None of the groups are functional in the village. A five-member committee is formed with one female member, but it is just for the sake of provision (of water) and nothing beyond that. There are rules and regulations for water consumption, but nobody follows them. When water used to run in the canal, influential and powerful people used to direct water to their fields in whatever volume they wanted. The rules were not followed by the farmers."*

Every 2 years, representatives of the user groups are selected. However, these members have no role to perform, except to vote in the district-level water user committee. Another user committee chair reported: *"There are WUAs of five members, with one female member. But, none of these are functional, and it's been like that from the very beginning when they were formed. Members did not attend the meetings regularly, and farmers also did not make payments. There arises internal conflict among farmers of this area when it comes to the functioning of the group. If all farmers united and paid their tariffs to the government on time, maybe the Department of Irrigation would listen to our voices. The government built a canal irrigation system for the farmers, but we are not all benefitting."*

Therefore, a growing discontent remains among the farmers when it comes to irrigation facilities and their management. Concerns about the equitable distribution of water through the irrigation canals were continuously raised. Moreover, this points to an inefficient mechanism through which equity issues were to be resolved.

The IWRMP, along with the DoI and Government of Nepal, is responsible for developing irrigation facilities. However, its presence is limited to the formation of WUGs and WUAs as well as overseeing the water flow for part of the canal network. Within the IWRMP, budget for infrastructure development is prioritized over institutional development. Furthermore, although officials claim that a gender component has been included, the representation of women is limited and tokenistic in nature.

A male civil engineer from the Central Coordination Committee of Water Users at the Sunsari-Morang Irrigation Office in Biratnagar pointed to the weaknesses of WUAs in this way: *"The problem is that farmers do not obey the norms of the WUAs. There is a provision of fines for those disobeying the rules regarding water use, but farmers are not afraid of that. People have no interest in participating in WUA meetings. In some cases, the chairpersons of WUAs themselves break the rules and misuse their positions. Hence, WUA management is in ruin. Management of WUAs by the IWRMP is not possible. IWRMP staff are not always present in the village. This is a local community matter, and security officials have a major responsibility to settle it."*

Concerns are more explicitly expressed by many members and chairpersons of WUGs as well as by farmers. However, all parties reflected a tendency to fault others rather than the management of the program. One of the chairpersons from a WUA in Amaduwa explained access to services and villagers' engagement in implementing the IWRMP on the ground. He said, *"I was also present during the time of Sunsari-Morang canal construction. The watercourse was developed by determining a specific time and pattern for the distribution of water into the agricultural lands on a rotation basis. But, farmers started using the canal illegally by directing all the canal water only to their own lands. When farmers in the head part of the canal started constructing pipes illegally, it became impossible for water to reach the tail-end. We collected villagers from four or five VDCs and aggressively protested about this practice. We also made complaints against the Department of Irrigation office for not taking action against illegal activities to divert canal water. We demanded the availability of water, but nothing has been done so far. Also, last year, the committee held a meeting on the same issue, but again the situation became worse because villagers in the upper levels, like Amahibela, protested; a conflict situation emerged."*

This suggests that, in reality, nobody is ready to irrigate in a systematic way. On top of that, IWRMP officials appear helpless to reach out to farmers, except in delivering water to the canal or intervening in conflicts over water. This is worsened by a lack of information sharing on other institutional capacity building opportunities, as well as

resources and facilities that are available to the farmers through government departments and the IWRMP. This has created a situation where only influential farmers and middlemen from the community can reach out to the district office for other benefits, and ultimately marginal farmers feel they are ignored in the process. Female-headed households are seen as the obvious losers in this process.

Findings from the household interviews conducted also suggest a similar trend in Sunsari district, as reflected elsewhere. People feel there is ambiguity regarding the irrigation facilities provided by the government. Groundwater irrigation is seen as an option, but it is rather costly and abrupt due to the erratic supply of electricity and its high tariff.

Experiences shared by the informants make it clear why Amaduwa VDC at the tail-end of the canal is not receiving water, and even when Ekamba VDC at the head of the canal does receive water, farmers still complain. From various experiences explored earlier, it is clear that the IWRMP is not functioning at the level that it should and this could be due to various reasons. However, the pertinent reason is the malfunctioning of WUAs as well as the negligence of officials and technical experts. The functioning of the canal system is becoming lethargic to the extent that water does not flow further than half way through the track, but nobody takes responsibility for this – neither officials, WUA members nor farmers.

Although Amaduwa VDC falls under the IWRMP and there is a redundant structure of Sitagunj Canal Irrigation System, people are highly dependent on groundwater. Surprisingly, there is nothing being done by the Government of Nepal or IWRMP officials to support farmers in terms of groundwater irrigation.

There appears to be limited local ownership and capacity to make decisions, in spite of the presence of WUAs. This may be aggravated by the fact that there is limited involvement of women in canal management, even though they are the primary users of irrigation water. Although the project incorporates gender at local levels and uses gender-sensitive, inclusive and pro-poor approaches, the plans and policies regarding water management in Sunsari district do not seem to be operational. Data from the field suggest that programs related to women's engagement in institutions and access to services are not functional, at least in the case of two villages in Sunsari district where this study was carried out.

Moreover, to ensure women's access to irrigation, the IWRMP has incorporated gender strategies into its Indigenous/Vulnerable Community Development Plan as part of the Social and Environment Management Plan. The societal aspect of the project is to be addressed through its Resettlement Action Plan, Indigenous People Development Plan and Gender Action Plan, but these plans appear to have limited implementation at a ground level in the study sites. Although policies are in place to ensure that 33% of new WUAs are comprised of women,

they are not operationalized in practice. In Sunsari district, only a few of the WUAs studied have reportedly been able to meet this policy requirement, and in the majority of these WUAs, women's participation appears to be only tokenistic and symbolic. In Ekamba VDC, water runs through the canal, and therefore the WUA is active to some extent. Nevertheless, female members have little influence. Women's presence is seen as a requirement of the project, rather than as a need for their active participation and contribution in the context of the feminization of agriculture. In Amaduwa VDC, the participation of WUG members is limited to paper. Moreover, at times, the WUG serves only as a political tool, which is heavily influenced by various political interests depending upon the members' inclinations. As a norm, there must be at least one female member in the committee, but women's presence appears to be tokenistic.

To understand why women's participation in WUAs has been limited, it is important to explore their restricted role in the public sphere more broadly. It was reported that other than microfinance institutions (MFIs), women were engaged in a few other community institutions. This demonstrates their restricted engagement in public matters compared to men. Moreover, it appeared that the priority for women was to focus on income-generating activities, whereby they could save money and acquire economic prosperity for the household, and not to actively participate in community affairs.

Only one respondent from Amaduwa VDC, Sita Devi Chaudhary (female), stated that she was involved in one NGO in the capacity of secretary. Chaudhary shared her experience in this way: *"I have passed the SLC (passed the School Leaving Certificate). During our time, it was unlikely for a woman to achieve that level of education. Most of the other women can only read and have studied up to class three or four. I used to coordinate the programs conducted in the school, and took the initiative to conduct an informal education program. I called and motivated women and girls to have an informal education. I can speak Nepali very fluently, while most of the women can speak only Tharu language. I also took part in various awareness and sanitation-related programs. I conducted trainings related to education and awareness to women in Biratnagar and Itahari towns. This has given me the confidence and strength to manage my day-to-day activities."*

One woman from Ekamba VDC, who runs a small shop with her husband, explicitly elaborates on why women display an indifference toward participating in WUAs. She stated, *"We (i.e., she and her husband) initiated this shop together and both contribute labor to run it. I can earn NPR 1,000-1,500 (USD 9-14) a day. I feel good now that I have access to money. But, in my view, though I have money, my condition is the same as before when I had no access to economic resources. I don't think that I am empowered, because I am not educated. If I had education, I would have a broad knowledge of many things and also about the world, and that would have helped me to improve my status as a woman."*

This indicates that although women are increasingly becoming economically empowered, without education and with low self-esteem, they feel uncomfortable to actively participate in anything other than women's groups. In addition, significant sociocultural and ideological barriers also remain, and they restrict women's roles in the public sphere. At times, the way in which family members and others in the community view women play out remarkably. One woman from Ekamba VDC explored these barriers, suggesting that people in the village, especially men and at times husbands, think differently about women. They become suspicious if women go out, talk to other men or go to the market with others. This also contributes psychologically and limits women's capacity to think and engage in public matters freely.

4.4.4. Groundwater irrigation and gender roles

In contrast to the IWRMP in Sunsari district, the GWRDB program in Fulkahakati of Siraha district presents a somewhat positive case. To some extent, farmers acknowledge the benefits of the program in terms of free shallow tube wells, seeds, agricultural instruments and various capacity building trainings. The presence of women's farmer groups cultivating land irrigated from GWRDB-sponsored wells is substantive in Fulkahakati (see Figure 8). This represents one of the few instances when a new enterprise opportunity is realized in agriculture and has boosted women's financial empowerment. However, a number of challenges remain.

While Fulkahakati village represents a positive success story, in other villages, elite capture of free tube well programs remains a constraint, and this affects both male and female farmers equally. Several instances were reported of farmers receiving free shallow tube wells for use by their own households. For example, one of the *Tharu* families that had 3 *bighas* of land (around 2 ha) was provided with one shallow tube well by the government under the GWRDB program. They had a total of three shallow tube wells installed on their land, one provided by the government and two self-owned, despite the fact that the government-installed wells were supposed to be reserved for WUAs. According to this farmer, 4 years ago, a program provided two shallow tube wells to a ward. The application for the tube well had to go through WUAs in the ward, even though these wells ended up being given to individual households. Two shallow tube wells were installed by the GWRDB: one went to the WUA itself, while the other was installed on the land belonging to a farmer whose family member was part of the WUA and it was only used by that household.

One local informant expressed, "If you go to the Department of Irrigation, the officials show documents of their work and records of how many tube wells they have distributed. But, if you go to the actual site, there may not be any tube wells because the distribution of these wells is only documented. In our village, such things do not happen. You can visit the sites and it will be apparent that there are 10 shallow tube wells in this ward, but all on private land."

Weak institutions mean that elite capture often takes place at some point after the infrastructure has been installed. There is an increasing trend of privatizing publicly owned tube wells. The groundwater office transfers tube wells installed to WUAs after providing infrastructural and technical support, although they sometimes cease to function soon after installation – after which they are taken over by individual farmers – something which is easily done if it is installed on one's own land. No monitoring mechanism exists due to insufficient staff members (social mobilizers) in the groundwater office.

While significant positive changes were visible as a result of the scheme in Fulkahakati village, these transformations were quite localized geographically and among particular social networks. The importance of social networks and political influence helps explain the limited distribution of benefits to farmers. The GWRDB office has only limited staff, making it difficult to keep up with the demands from farmers. According to one official, there were 700 applications for shallow tube wells in Siraha district in the last year, out of which 380 were distributed. Farmers felt that it is easier to benefit from the scheme, if there are connections with a politically influential individual who is familiar with the GWRDB staff as well as the procedures to ensure successful approval of an application.

One government field employee noted, "*The influence of politics is too high here. If the program of 250 tube wells comes from the government, the farmer group influenced by the political party has a high chance of getting it, rather than the needy farmers. In my view, 85% benefit through political party influence, while only 15% is for the needy farmers. The farmers who are aware of these politics complain to us saying, 'Why did we not get the benefits?' or 'Should we give you a bribe or some money?' Another influence also comes from the higher-level officials. In the groundwater office, almost all higher-level officials are from the local area here, so, of course, locality also influences benefit sharing. In some cases, the process may not be completed, the form may not be fully completed or documents may be lacking, but the application is approved due to political influence.*"

One official also acknowledged the challenges they themselves faced due to pressure from political parties and other influential individuals:

"*The selection and priority given is based on needs. We analyze who has received the subsidy in past years and who has not. There are several cases of misuse of the benefits by the farmers too. Some have only fixed the boring to their land for the sake of social prestige, but are doing no cultivation at all. There is lack of coordination. But, of course, we also have the pressure from farmers and political parties. We even receive written letters from Kathmandu from some political parties who indicate which user committee or VDC is to receive subsidies. In some way, we also have this kind of biased thinking. We have to address all these issues at both the party and individual levels. We have to deal with them very patiently. We try to counsel them about the limited scheme. So, this management work is tough.*"

FIGURE 8. VEGETABLES CULTIVATED BY A WOMEN'S FARMING GROUP IN FULKAHAKATI VDC, WHICH HAD JOINTLY RECEIVED SUPPORT IN INSTALLING SHALLOW TUBE WELLS AND PUMPS THROUGH THE GWRDB PROGRAM.



Photo: Fraser Sugden.

Due to the persistent culture of political brokerage in getting subsidies, marginalized groups are frequently left behind. Some have to depend on middlemen to receive free wells or other facilities. This can result in extra expenses, incurred even before getting any benefit, which makes it further complicated for poor and marginal farmers to get facilities from respective offices. Women, in this case, particularly those whose husbands are overseas, are often doubly excluded. Their capacity to engage in the public sphere alone is itself limited, let alone their ability to exercise political influence in accessing government services. This also raises an important observation about those women who have successfully benefitted from the scheme, such as the women's farmer groups in Fulkahakati village. Success was in part linked to their integration into a social network led paradoxically by a politically influential male leader and enterprising farmer. In this ward, 10 shallow tube wells and pump sets had been installed by the GWRDB, several of which were used by the women's groups. It was claimed that this would not have been possible without the presence of the said gatekeeper, with his political influence and familiarity with how to navigate the government system.

Field-level staff of the GWRDB commended this individual's leadership as well as the unity and cooperative spirit of the WUG. The group had not only installed tube wells, but had organized trainings and mobilized multiple other benefits provided by line agencies. While the benefits to the group members in terms of empowerment were commendable, the dependence on politically connected gatekeepers

does mean that the scope to reach out to a wider set of excluded women is limited. Women who have weaker social networks or who live in more remote locations are often disadvantaged.

This frustration was voiced by one woman in Siraha district, whose husband was a migrant laborer working overseas, with reference to an existing WUA in the village that had benefitted from subsidized tube wells. She highlighted the limited and exclusive social networks through which benefits were shared, while also highlighting the challenge as a woman to participate in such public activities without her husband. She noted that:

"Women members from one household (that of an influential WUA leader) are in many groups. They also go for trainings. He (the gatekeeper) is the chairperson and is well known in the village as well as in the district. My husband is not here, so who will participate in the programs? And, of course, no one will tell us about anything."

Indeed, most of the opportunities to benefit from various programs and trainings, such as those on vegetable farming, pickle making, goat rearing and capacity building, were disseminated only in this particular group, and membership in part appeared to be linked to a person's social and family networks.

Lack of awareness of ongoing schemes was also a constraint, and this was in part linked to a person's access to social networks. For instance, one female marginal

farmer from Fulkahakati village reported her knowledge of subsidies in a somewhat confused way. She explained:

"Some say there is a subsidy for installing tube wells. Some say we got everything for free. Some say they got a discount of only NPR 1,000 or NPR 500 (USD 4.40 or USD 9) and had to pay the balance from their own money. I have actually not understood these subsidies and discounts. I am also not engaged in any such groups."

The government officials also provide trainings regularly for the farmers. Regarding this, one respondent added, *"I have never gone to any trainings and nobody has come to call on me either. It is always the same people who go to the trainings and the same people who get benefits. They never inform us."* There was also a reported tendency for information not to be shared by established beneficiaries, out of a fear that they might lose their control by creating competitors.

This ambiguity regarding government programs and procedures was widespread. Information sharing mechanisms mostly exist in the district's headquarters, and those responsible for disseminating information at grassroots levels, such as social mobilizers, are mostly linked with established farmer groups or WUAs. Hence, other marginal farmers, those not in a group from more informal groups, were not present and therefore isolated.

A farmer from Bhagwanpur village shared similar thoughts. He said, *"There are various programs. Leader-type people go to participate in them. There is an agriculture service center at Bhagwanpur for eight VDCs. Once they provided some agricultural equipment, but it was all distributed among those so-called leader-like people, and the remaining equipment was sold. There is one senior staff in this agriculture service office; he only comes to the office 10 days a month. He cannot be found on the remaining days when we need official help and suggestions."*

To give another example, a national farmer's association (*Rastriya Krishak Samuh Mahasangh*) is responsible for the protection of farmers' rights. Influential farmers in the districts created this institution to advocate for the well-being of marginal farmers and to bring all farmers under one group. A VDC treasurer and district-level member of the national farmer's association claimed that they have been able to inform and educate marginal farmers on the facilities and subsidies that might be available through various organizations. To some extent, this platform is also useful to help women farmers, in particular, to submit an application to receive benefits. The platform teaches farmers to fill in the forms and basically provides awareness programs. Yet, it was also mentioned that this institution is turning out to be political in nature and is not able to reach everyone. The organization is also heavily dominated by male members.

Complex paperwork was itself a significant constraint for women farmers, many of whom have limited experience in dealing with officialdom. This complexity is further

aggravated if the beneficiary lacks a formal education. The secretary of one of the farmer groups in Fulkahakati village stated that illiteracy is one of the major reasons for lower participation of women in decision making in any WUG. She explained, *"As a secretary of the group, my main responsibility is to inform all members about the meetings regularly. I also have to keep records, but I don't know how to read, write or calculate. Therefore, even if I participate in all the activities of the group, I lack the confidence to go out and perform."* She highlighted that the lack of education is a hindrance for women to be successful in the public sphere and institutions more broadly. Empowerment due to training and capacity building was the reason she was able to access benefits, such as seeds, fertilizers, tools and subsidies for agriculture from different institutions, including GWRDB, for her group.

Regarding access to subsidies, the study conducted by Kishore et al. (2015) in Bihar also showed how a lack of awareness due to limited education among smallholders and complex bureaucratic processes made diesel subsidy programs ineffective. To some extent, similar constraints are evident in Nepal. Many farmers felt that the paperwork that had to be completed to benefit from a groundwater scheme (and other government initiatives) was too cumbersome, a finding also echoed in an analysis of groundwater by Sugden (2014). Aside from forming a group, each member must supply documents, such as a map of the VDC, landownership documents, citizenship papers and a recommendation letter from the VDC. This was not an easy task for poor women farmers, particularly those without the time to deal with the paperwork or with more limited literacy and familiarity with government procedures.

Land titles are considered to be important for women to access state agricultural services. Women claim that, in comparison to the past, there is a growing trend at present for people to buy new land in the name of a female family member. Interview data suggest that out of a total of 24 households in Sunsari district, 15 female-headed households reported that they had land in their name. Of these, 13 households had obtained ownership after purchasing new land, whereas two households had inherited land in a woman's name. A somewhat similar situation was reported in Siraha district: 14 female-headed households reported that they owned land in their name.

Initially, it was thought that the migration of male members was the reason for land entitlements being in the name of women. The provision of tax discounts also featured as another motive to have new land registered in a woman's name. However, land entitlement was specifically viewed as a form of financial security that could be used as collateral to take loans and support family livelihoods, particularly through schemes oriented to women.

For those without land, access to government services was limited. This affects not only women who have not managed to secure land in their name, but both men

and women within the population of tenant farmers in the region. For instance, members of one of the *Dalit* women's farming groups of Bhagwanpur village reported the constraints they faced in accessing irrigation-related services due to the lack of ownership of land. One of the members suggested that it is difficult to get free tube wells as these require landownership certificates. Two other farmers also noted the challenge posed by the lack of collateral for loans, which could be otherwise diverted into purchasing pump sets. Ladanidevi said, *"Now I have learned to do farming. But 2 katha of land is not sufficient to carry out proper vegetable farming. I want to extend my plot a little. I have also found a landowner who is ready*

to lease out his land. But the issue is that I am not able to get support for irrigation of the land that I am going to lease. It is difficult if you do not have landownership. Even MFIs do not give loans for pump sets as I do not have land that can be used as collateral."

Women take loans from MFIs and are responsible for paying back the loan – this is significantly easier if the land was in their name. Moreover, if loans are in women's names, it puts pressure on men to pay back the loan and that increases their bargaining power in the family. This also gives women a sense of ownership that eventually empowers them economically.

5. CONCLUSIONS AND RECOMMENDATIONS

A wave of agrarian stress has affected Nepal's Tarai-Madhesh region in recent years. Unpredictable climate, with frequent dry spells and precipitation extremes, coupled with weak terms of trade for farming alongside persisting inequalities, has substantially reduced the profitability of farming. As the profits from agriculture fall, the interest of young men in farming has dwindled, driving them into the migrant economy.

In the agriculture sector, a feminization of agriculture has been underway, with women increasingly taking on the responsibility for not only traditionally 'female' activities, such as paddy transplantation, but also the management of water on the farm, something that was always within the 'male' domain. The well-being of women, in particular, has been affected by this change, with a considerable increase in their work burden. Gendered vulnerability is, of course, intricately connected with other axes of difference. There is, for example, a significant divergence in outcomes for women with in-laws still present in the household, or for those from wealthier landowning socioeconomic groups, who can hire workers from outside to compensate for labor shortages.

Nevertheless, women have become economically empowered in new ways. Not only do many women control their husbands' remittances, with improved access to credit in recent years, but they are also increasingly taking up enterprise opportunities, particularly in the non-farm sector. However, despite this potential, not all female-headed households are able to benefit from off-farm enterprises to the same degree. Furthermore, these transformations have not been realized to the same extent within the agriculture sector, with the exception of certain pockets, such as Fulkahakati village, where access to existing social networks facilitated the establishment of a number of successful women's WUGs.

At a time when irrigation is becoming increasingly essential to cope with climate stress, the role of women within WUAs for canals is still marginal and largely tokenistic, despite the critical role they play in agricultural production. At a time when management institutions are breaking down, the limited involvement of women is particularly concerning.

With regards to groundwater, women from poorer households without their own pumps face challenges in accessing water in male-dominated pump/tube well rental markets. This is despite a number of schemes offering free tube wells or pumps to poor farmers. Lack of awareness and familiarity with the bureaucracy is a significant barrier. However, the most apparent challenges pertaining to groundwater are not rooted only in gendered constraints, but in institutional weaknesses in the implementation and design of programs. Poor outreach by groundwater interventions and elite capture of subsidized resources impose further constraints, particularly for women. In these contexts, the conditions for women who are already in a vulnerable situation can be aggravated by poorly implemented external interventions, and this is preventing them from realizing their full potential in agriculture, despite some new forms of empowerment in the non-farm sector.

At the level of policy and external development interventions, it is evident that the prevailing approach for increasing gender participation in the irrigation sector has serious limitations. A merely tokenistic and narrow focus on women's participation in WUAs does not encourage women's empowerment in this sector or address structural constraints. It diverts attention away from other important gender and social issues, for instance, the changes in gender relationships within households, farming systems and communities due to male out-migration. At the same time, the associated narrative that women's participation in agriculture is constrained by 'social norms' tends to remove the responsibility of public irrigation agencies from ensuring gender equality in the implementation of programs on the ground. It diverts attention away from gender discrepancies within public irrigation agencies, thereby avoiding a reflexive and critical effort on greater gender equality within the bureaucracy.

To address some of the issues pertaining to irrigation interventions for agricultural development and gender constraints as discussed in this report, strengthening equitable irrigation user groups are critical. They are a critical delivery mechanism for canal irrigation at a time when channels are falling into disrepair, while being the

most feasible mechanism to deliver otherwise expensive groundwater pumping technologies. First, and most importantly, meaningful rather than tokenistic participation of women must be assured. Not only are concerted efforts required to reach out to women farmers when groups are established, but there is also a need for women to enter leadership roles within committees. This must, however, go alongside capacity building and training. This includes sensitization relating to the various schemes and subsidies available to farmers, as well as training in leadership and financial administration. User groups can also be linked with other income-generation schemes – the success of the water user committees in Fulkahakati is a case of relevance here, whereby the groups had not only received irrigation equipment, but were actively engaged in training in vegetable production. There is considerable scope for

this type of user group to achieve better access to credit, inputs and finance. Options must be explored for marginal and women farmers of specific caste groups, in particular, to ensure they have access to loans from cooperatives on easy repayment terms.

Cooperation through user groups can even be taken to a higher level through radical new experiments such as farmer collectives (Agarwal 2010, 2018). Such models have been piloted in neighboring districts of Sunsari and Siraha on both sides of the Nepal-India border, where marginalized women have joined collectives in which labor and profits are pooled, in order to overcome scale constraints to groundwater irrigation, facilitate the cross-fertilization of knowledge and increase their bargaining power with external actors (Leder et al. 2019).

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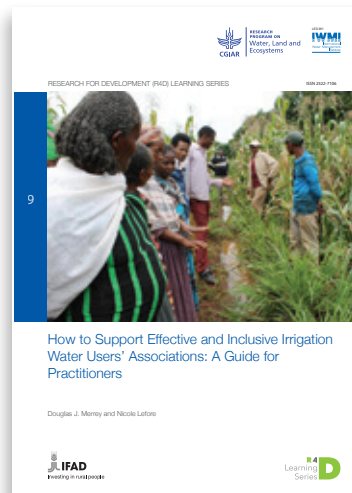
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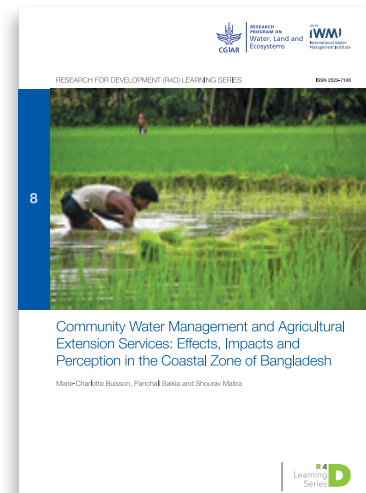
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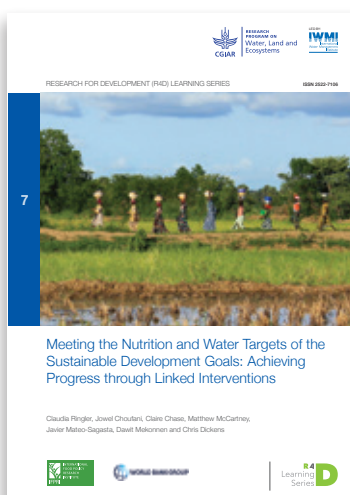
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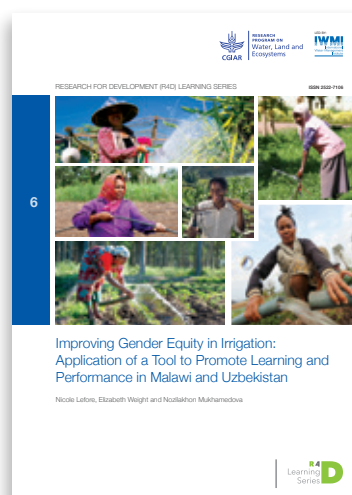
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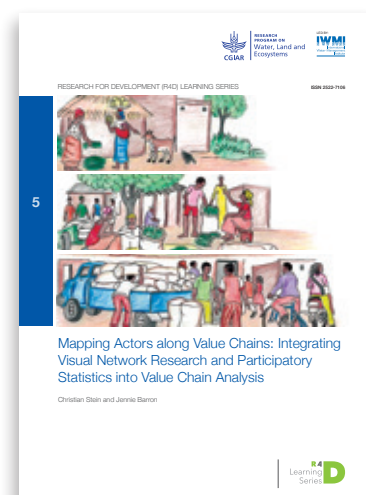
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