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Male migration and the transformation of gendered agriculture work: a comparative exploration of heterogeneity across selected Indian states

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ABSTRACT

Male migration among agriculture-dependent households has emerged as an important livelihood strategy for coping with poverty, food insecurity, climate change, and several other risks and shocks in the Global South. Emerging research on the impacts of male migration on women's agency, especially in agricultural production and decision-making, paints a one-size-fits-all picture. This paper, through a comparative, qualitative analysis of the implications of male out-migration on gender roles and responsibilities in agriculture across four different agroecologies in India – forested, mountainous, semi-arid, and coastal – highlights the heterogeneity in women's experiences of male migration in the Indian context. While the nature of migration and the amount and regularity of remittances shape the increase or decline in women's work and responsibilities, factors like age, caste, class, life stage, and context also play a significant role. We note that current scholarship has given too much importance to the narrative on remittance-driven livelihoods at the cost of multiple factors that shape women's roles, experiences, and strategic choices in migrant-sending communities. What appears critical for transformative change is state policy that facilitates and enables collective action, central to overcoming the patriarchal constraints women encounter, especially as they shift from labouring to managerial roles in farming.



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1. Introduction

Migration has emerged as one of the most common livelihood strategies for coping with poverty, environmental disasters, food insecurity, climate change, and several other risks and shocks globally (Food and Agriculture Organization [FAO] 2016; Maharjan et al. 2020; Rigg 2007; Singh et al. 2018). With declining returns from agriculture due to growing production and marketing risks, migration contributes to boosting household incomes, building assets, and equally gaining symbols of modernity and status, be it in terms of clothes, gadgets, language, ideas, or other everyday practices (Deshingkar and Akter 2009; International Organization for Migration 2005; Rao 2014). While the emphasis of migration research has been on remittances and poverty reduction, there is, more recently, a growing body of work on the social impacts of migration on households and communities, in particular, women 'left behind'. Narratives around increases in women's work burdens and responsibilities in agriculture, without any commensurate gains in authority, have become truisms, without nuanced empirical verification. The impacts on women's labour contributions to agricultural production, their agency in decision-making, or control over assets, alongside mobility, status, and gender relations more broadly, remain unclear, appearing to be contingent on context (Choithani 2020; Rao and Mitra 2013; Singh 2019).

In this paper, we seek to advance knowledge on this topic by pointing to subtle differences and heterogeneity of experience within a single country, India, by asking three interlinked questions. First, how does male rural out-migration impact women's work, resource access, and decision-making agency in agricultural production and post-production activities across different agroecological and social contexts? Second, how do differences in women's identity (by age, caste, ethnicity, and class) shape these experiences? And third, what are the implications of differences in men's migration patterns for women's roles in agriculture at a more strategic level, including their capacity to innovate and participate more widely in and through collective action in the public domain? Through a comparative, qualitative analysis across four different sites in India, we seek to make both conceptual and empirical contributions to this debate.

In the next section i.e. [Section 2](#), we outline our conceptual framework. [Section 3](#) covers the study's methodology and context. [Section 4](#) examines migration drivers and their impact on household livelihoods. [Section 5](#) presents and discusses findings on the transformation of women's roles in agriculture. [Section 6](#) offers concluding insights and future recommendations.

2. Migration and the transformation of women's roles in agriculture: framing the debate

Migration research has focused primarily on international migration due to the legal and policy challenges it throws up, and the economic and social opportunities it offers. Yet, internal migration is often larger in scale. In India, 37 per cent

of the population, or about 450 million people, are internal migrants, with 62 per cent moving within districts (Census of India 2011; Supriyo 2019). This number is likely to be higher, given the 2021 Census has been delayed due to the Covid-19 pandemic and we rely on the data from the 2011 Census of India. While the number of women migrating for work is increasing (Mazumdar, Neetha, and Agnihotri 2013), the majority of labour migrants are men, with the Government of India predicting a rising trend in short-term, circular male migration (Government of India [GoI] 2017). With smallholder farming unable to meet household needs and aspirations, men from poor, rural areas migrate seasonally to urban centres, or irrigated rural regions, to earn incomes to supplement household food production, given the social expectation of men as 'household providers' (Bergman Lodin et al. 2019; Lei and Desai 2021; Rao and Mitra 2013). Women are 'left behind' to care for the farms, children, and elderly (Datta and Mishra 2011; Desai and Banerji 2008; Jain and Jayaram 2023).

Women's contribution to subsistence farming, often viewed as unpaid household labour, has become more visible at the community level in the absence of men (Rao 2012). The 'feminisation' of agriculture based on an increasing number of women in multiple roles as cultivators, entrepreneurs, and labourers (GoI 2017) and an increase in women's workloads as a result of male migration (Garikipati 2008; Leder 2022; Rao et al. 2019), is confirmed by the Indian Council of Agricultural Research, which records women's participation to be 75 per cent in the production of major crops, 79 per cent in horticulture and 95 per cent in animal husbandry (GoI 2018). Women experience much greater time poverty across diverse settings, especially for domestic tasks, including cooking, often resulting in poor diet quality (Bardasi and Wodon 2010; Gammage 2010; Nichols 2016; Rao and Raju 2020).

The impact on women's roles in agriculture is tied to migration patterns and remittance size of men. Higher remittances led to increased farm management roles for women, while lower remittances added to their workload without increasing decision-making power (Maharjan, Bauer, and Knerr 2012; Nichols 2016; Rao and Mitra 2013). Chandrasekhar, Sahoo, and Swaminathan (2022) found that women from 10 million short-term male migrant households were more likely to be engaged in farm management decisions. However, the 'feminisation of farm management' remains under-researched, and national and state agricultural policies are not yet aligned to support women in this role transition (GoI 2011). In households where women received remittance, the social index of the household, especially in education and health, increased significantly (Amega and Tajani 2018; Lopez-Ekra et al. 2011).

There are further complexities to the impacts of male migration on women's agency and decision-making capabilities. Desai and Banerji (2008) found that in Indian states with high male migration (Uttarakhand, Bihar, and Uttar Pradesh) women's position depended on the household structure. Women in nuclear households had greater autonomy and responsibility than those in

extended families (cf. Choithani 2020). Young men here were often reluctant to migrate unless there was another male member to replace them within the household (Jetley 1987). Elderly women were, however, able to make farming decisions in the absence of men, pointing to the importance of age and seniority as intersecting identities shaping women's agency (Kaur 2022; Sinha, Jha, and Singh Negi 2012). Decision-making around food consumption or planting of food crops, however, appears to lie firmly in women's domain (Lecoutere and Wuyts 2021).

Research on women's empowerment in agriculture has focused attention on women's agency and decision-making in production and marketing and, to some extent, access to land and other resources (Alkire et al. 2013). It has largely left out value-addition and post-harvest activities, the introduction of innovative practices on and off farms, having to deal with adversity, or entitlements and recognition in the public domain. Further, it is assumed that in the absence of legal rights to land, women lack access to land use and decision-making in relation to farming, overlooking the shifts occurring in the context of male migration (Doss et al. 2022; Garikipati 2009; Pradhan, Meinzen-Dick, and Sophie 2019; Pyburn and Van Eerdewijk 2014).

The lack of legal rights to land does limit women's access to credit and technology. This issue is increasingly being addressed through collectives of women farmers, Self Help Groups (SHGs), and farmer producer organisations – supported by state and non-state actors (Harrington et al. 2024). In fact, the policy framework for women's empowerment in India has largely been operationalised through the organisation of SHGs as part of the Ministry of Rural Development's National Rural Livelihood Mission (NRLM). In many Indian states, the focus is often more on income generation rather than strengthening women's roles in agriculture. Despite issues around land leasing, women's groups provide access to other productive resources – credit, extension, labour – and help women gain recognition as farmers (Agarwal 2020; Sugden et al. 2021).

What is clear is that migration does not only reflect the exercise of rational choice by an individual for economic maximization (Todaro 1976), but is shaped by interlinked and complex drivers at the micro, meso, and macro levels, working across scales from the individual to the household, local and regional (Kothari 2003). These include individual attributes such as gender, age, education, or marital status, alongside household structures, land ownership patterns, and other cultural practices. Macro-level drivers include seasonal poverty, agroecology, the vulnerability of farming in the context of climate change, access to regular employment and wages, amongst others. These scales intersect and overlap, reconfiguring patriarchy and social relations in particular ways in different regions, contributing, in turn, to a diversity of outcomes.

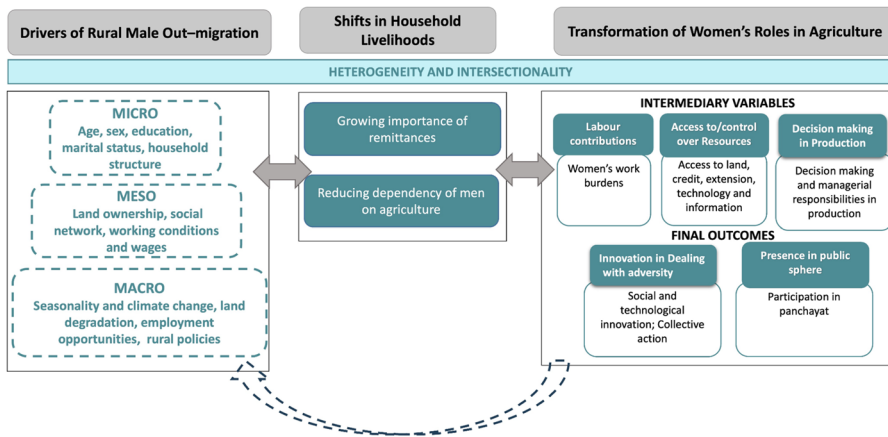


Figure 1. Conceptual framework: male out-migration, household livelihoods, and the transformation of women's roles in agriculture.

Figure 1 outlines the conceptual framework adopted in this paper to understand male out-migration and the resultant changes in women's roles in agriculture across five dimensions – labour contributions, access to productive resources, and production decision-making at the intermediate level; the ability to innovate to cope with adversity and participate in the public domain at a broader societal level. The growing importance of remittances and the declining contribution of agriculture to household livelihoods provide the context for this exploration.

Applying a gender lens allows us to understand migration as a continuum with different motivations, routes, and consequences for differentially positioned men and women. It suggests an intersectional perspective, wherein men and women are not homogenous categories but differentiated by caste, ethnicity, household structure, age, or education, with different intersections playing out in different sites and contexts (Mendola and Carletto 2012; Rao and Mitra 2013). An intersectional gender lens also enables us to realign the gaze to accommodate not just the agency, choices, and outcomes for those who migrate, but also for those who stay behind. Rather than assuming victimhood, it helps us examine women's strategies for using remittances creatively to ensure future food security while striving for greater recognition of their contributions and an expansion in their sphere of influence (FAO et al. 2023).

3. Methodology and context

This paper uses data collected from across India as part of the Transforming India's Green Revolution by Research and Empowerment for Sustainable food Supplies (TIGR2ESS) Programme. The methodology, primarily qualitative, allowed for the co-creation of knowledge from the ground, ensuring

comparability alongside context-specificity (Petesch, Badstue, and Prain 2018). Interestingly, migration was originally not a part of the project but emerged during the process of data collection as an important dimension in people's lives. The question that emerged was: Who migrates and why? What happens to those who (youth and adult men) migrate and those who (women) are left behind? We, therefore, also decided to explore the complex and contextual social and gender relations across these contexts from a migration viewpoint. A summary of the methodology and the context is presented here, with details in [Appendix](#).

3.1. Site and sample selection

Sites were non-randomly selected based on partner strengths to represent diverse agroecological and socio-economic conditions. This paper uses an exploratory case study approach and draws on data from four agroecologies: semi-humid Southern Bihar, mountainous Uttarakhand, semi-arid Telangana, and coastal Tamil Nadu. While three sites were part of TIGR2ESS, the Uttarakhand site was included due to its history of male migration and women's agricultural interventions. Data from the 2011 District Census and 2017 District Human Development Report guided site selection. The locations of the selected districts are presented in [Figure 2](#).

3.2. Site description and context

Given the importance of the caste system in shaping social hierarchy in India, we selected sites and respondents representative of different castes and social groups. At the top of the caste system are the General or Forward Castes, including *Brahmins* (priests), *Kshatriyas* (warriors), and *Vaishyas* (traders). Below them are the large category of Backward Classes – the Other Backward Classes (OBC) and with fewer opportunities the Most Backward Classes (MBC). The Constitution recognizes Scheduled Castes (SCs) and Scheduled Tribes (STs) as historically marginalized groups at the bottom of the social ladder. SCs and STs have adopted the positive labels Dalits and Adivasis, respectively, (Goghari and Kusi 2023). The four sites are briefly profiled below. Further details are in [Appendix Tables 1 and 2](#).

3.2.1. Site 1

Four Santal villages (Scheduled Tribes) in two tribal *panchayats* (village councils) were selected for study in Jamui district, Southern Bihar. The villagers are mainly smallholder farmers, dependent on subsistence rain-fed agriculture, minor forest produce collection, agricultural labour, and seasonal and circular migration.



Figure 2. Study locations in the four agroecologies (source: Authors).

Table 1. Sample size in the four sites.

		Site 1 Bihar	Site 2 Uttarakhand	Site 3 Telangana	Site 4 Tamil Nadu
Methods used	Sample characteristics				
Indepth Interviews	Migrant men, women from migrant families and non-migrant men and women	31	11	11	30
Key Informant Interviews	Village leaders and the residents who know about migration and its trends	8	16	10	10
Focus Group Discussions	Women	12	11	14	7
	Men	12	3	14	2

Table 2. Summary of main findings.

	Type and patterns of migration	Opportunities for women left-behind	Outcomes for women's role in agriculture
Site 1 Bihar	Seasonal and circular migration for semi-skilled and unskilled labour work Unmarried men: long distance; Married men: shorter distance and frequent visits to origin	Women manage household farms, taking on local labouring tasks or the collection and sale of forest produce, to earn additional incomes. Men usually return home to plough their fields before the onset of the monsoon	Women are taking on more managerial roles in agriculture and controlling the use of remittances. Their involvement in SHGs has enabled access to agricultural innovation and extension services. Emic perspectives of women value reciprocity over autonomy in decision making
Site 2 Uttarakhand	Permanent migration for educated, general caste families, semi- permanent migration for semi-skilled and those with low literacy levels, from poorer general caste and Dalit families. Poorer men in hospitality jobs; well-educated men in defence and private salaried jobs	Women work in their own fields and in the federation. Their income comes from selling their produce to the federation, dairying, leasing out land. Dalits work as daily wage labour	Women are involved in federation activities as producers, and in value addition processes. Remittances and availability of time have given women the opportunity to get involved in collective action through groups/federations. Where these do not exist, challenges to agriculture have led to a reduction in women's agricultural work
Site 3 Telangana	Short-term/seasonal/day migration by middle class- and lower socio-economic groups; the rich upper castes usually follow permanent migration and remain absentee landlords	Women look after and manage all agricultural operations. Young, unmarried women are not averse to farming, recognizing they may have to do so if married into agricultural households	Women manage all activities, from land preparation to post-harvest and sometimes marketing. They also work as labourers in others' fields. Cropping pattern plays an important role, as the dominant paddy, cotton, and chilli crops require more women's labour. These opportunities are available in their villages and neighbouring locations
Site 4 Tamil Nadu	Seasonal migration for employment as masons, temple construction workers and helpers to masons	Women from the Dalit community and widows have come forward to perform both managerial and labour tasks. Women from MBC landed households are able to innovate on their land	The transition from housewives to active agricultural workers has increased women's roles in managing farming activities. Women have begun leasing additional land for cultivation, creating new avenues for economic participation in farming

3.2.2. Site 2

The Uttarakhand study area lies in Almora district, at an altitude of 1500 metres in the Himalayan ranges. Farmers in the selected two villages own marginal and small fragmented land holdings, with either none or low access to irrigation and high dependence on erratic rainfall. Migration has historically been significant here. The Integrated Livelihood Support Project (ILSP) that promoted women's federations in one of the villages provided an entry point for our study.

3.2.3. Site 3

In Telangana, data was collected from three semi-arid villages of Warangal district. These villages are near a tank site that was restored three years ago by desilting and strengthening the tank structures. Most farmers have small or marginal holdings and belong to the dominant other Backward Class (OBC) category. The data captures pre- and post-tank restoration scenarios and the impact on migration.

3.2.4. Site 4

The study sites in Tamil Nadu are coastal hamlets in Mayiladuthurai district. Canal water from the river supplemented by rainfall from the Northeast Monsoon, supported marginal and small farmers from the Backward Class and share-croppers from the Scheduled Caste by enabling double and triple paddy cropping. In the last two decades, indiscriminate groundwater extraction for shrimp farming has led to increased soil salinity, making only one crop possible annually.

3.3. Respondent sampling

In Sites 1, 3 and 4, communities were sampled based on age, gender, and marital status. Voter lists or the list of households in the village, secured through the village *panchayat*, were used to identify the sample. An individual from every fifth household was randomly selected to maximise variation. A slightly different approach was adopted in Site 2, with the sample representing different categories of migrant households depending on the age and marital status of people left behind. These included widows with migrant sons living alone, wives with young school-going children, wives staying with their in-laws and children, and elderly parents left alone in the village. Additionally, the study was conducted primarily with women directly working with the federation, as more than 50 per cent of them were from families affected by migration.

3.4. Data collection

The empirical instruments were a set of tailored in-depth interviews, key informant interviews and Focus Group Discussions (FGD) with the respondents conducted between May 2019 and March 2020. [Table 1](#) presents the sample size and an overview of the data collection methodology.

Ethical approval was secured from the University of East Anglia's Development Ethics Committee. Informed consent was secured from the respondents for participation and audio recording of interviews and FGDs. Protocols of anonymity and confidentiality were followed. Data was

audio-recorded and stored in a shared Google drive, accessible through a secured password.

3.5. Data analysis

The interviews and FGDs were translated and transcribed into English, and a bespoke data matrix template in Excel was used to juxtapose responses. Thematic analysis was conducted based on themes developed during the instruments' design and complemented by the data emerging from the field. While several themes emerged, in this paper, we focused on migration patterns and their implications for shifts in gender roles in agriculture.

4. Rural out-migration: setting the context

4.1. Patterns and drivers of migration

Amidst increasing climatic risks confronting agriculture, in the absence of reliable irrigation and other safety nets, and declining returns, alongside the lack of remunerative local employment, and the need for cash, food and livelihood security, the movement of people in search of better employment opportunities and aspirational fulfilment is inevitable (Nandi et al. 2022). Yet the patterns vary, depending on the intersections of caste, gender, age, marital status, land holding (and wealth) and local ecology. While seasonal migration is dominant in three of our sites (1, 3, and 4), Site 2 provides evidence of permanent or semi-permanent migration, mainly for the upper castes. In Sites 1 and 4, agricultural distress and environmental degradation respectively, are driving seasonal migration, while in Site 3, improved local opportunities lead to daily commuting for the poor and permanent migration for the better-off and educated male youth. We turn to a brief discussion of migration patterns, drawing out the social-structural factors that configure them differently across these contexts.

4.1.1. Site 1 (tribal Bihar)

Migration patterns of the Santal tribe have shifted over the past two decades from seasonal migration of women and men for agricultural work to the neighbouring state of West Bengal to longer duration single male migration to Maharashtra, Tamil Nadu, Karnataka and Uttar Pradesh states, to work in a range of unskilled and semi-skilled jobs in construction, businesses and factories. The men usually return home to plough their fields before the onset of monsoon as their identity as '*Chasa hor*' or cultivators is strongly embedded in their land and farming (Rao 2008). Women manage the farms, taking on local labouring tasks or the collection and sale of forest produce, to earn additional incomes. Pointing to their caregiver roles, one said, '*Who will take care of our farms, children, the elderly and sick if all of us migrate?*'

4.1.2. Site 2 (*mountainous Uttarakhand*)

Better employment opportunities, education and healthcare services appear to be the macro-level factors behind permanent and semi-permanent migration, the former dominated by the better-resourced general castes and the latter by the poorer, Scheduled Castes (Dalits) (Mamgain and Reddy 2017). A significant proportion of men migrate to Delhi, Haryana, Uttar Pradesh, and within Uttarakhand to work in restaurants and hotels and as domestic help, while those with higher education have jobs in the defence services and government salaried employment. In the study villages, more than 50 per cent of families had at least one migrant.

4.1.3. Site 3 (*semi-arid Telangana*)

The study villages witnessed rapid migration due to urbanisation and the development of manufacturing industries, mining, trade and miscellaneous services, alongside farming intensification with the provision of irrigation (Kamraju, Vani, and Anuradha 2017). Both seasonal migration and daily commuting are widespread, with women not left behind as in the other sites. Seasonal migration destinations include cities like Hyderabad or cities in Gujarat and Maharashtra states. The better-off and educated upper castes have migrated permanently to cities and towns with their families, functioning as absentee landlords.

4.1.4. Site 4 (*coastal Tamil Nadu*)

The study villages witnessed rapid out-migration of men from landed and landless households, post the December 2004 Tsunami. Insecure agrarian livelihoods due to increasing soil salinity (Prusty and Farooq 2020), alongside rising educational, health and marriage expenses, has led men of all castes to seek employment as masons in the states of Andhra Pradesh, Karnataka and Kerala, with some going to the Gulf countries. Men from MBC, have more skilled jobs compared to Dalit men. Women from land-owning MBC families generally stay behind, taking care of the farms, children and the elderly, while there is no significant change in the labouring activities performed by Dalit women. Marital status, education and age shaped the migration trajectories and experiences of men and women across the sites. In Bihar and Telangana, younger men move to gain skills and experience, while married men do it for their families' survival. Young men of all caste and class groups prefer to engage in non-farm work, driven partly by education and rapid urbanisation. Young women are open to agricultural work, knowing they may need to work on or manage farms if married into agricultural households. Only a few young unmarried women from Dalit and landless MBC households in the vulnerable coastal ecology (Site 4), prefer working in textile mills, given its promise of saving money for

their dowries. Compared to this, in the harsher mountain terrain (Uttarakhand), young, educated women prefer to move with their husbands. As one noted: *'Agricultural work is very difficult. I want to study more and work in a school or office'*.

Heterogeneity in migration trajectories is also shaped by meso-level factors including social networks and peer connections, linked to caste, class, wealth and gender. Tribal men in Site 1 and MBC and Dalit men in Site 4 report being influenced by their social network of out-migrating peers regarding their decisions on the nature and destination of work. However, the quality of these networks differed, with Dalit or tribal men securing lower-paid jobs than those from the higher castes, visible also in Site 2. In Telangana, women, especially from land-owning households, use their informal social networks for daily migration to neighbouring villages for agricultural work, especially during peak seasons, while landless women are employed through contractors. Both, however, have the agency to negotiate wages and benefits like transport and food provision given the high demand for labour. What is clear is the importance of understanding intersectional power dynamics in any analysis of migration and its impacts.

4.2. Emerging patterns in household livelihoods

4.2.1. Importance of remittances

The literature on long-term rural change in India points to the decline in the contribution of agriculture and the rising importance of migrant remittances to household livelihoods (Djurfeldt et al. 2008, Himanshu, Joshi, and Lanjouw 2016), yet this is not necessarily the case. In Sites 1 and 3, agriculture remains an important source of livelihood, and despite low productivity, households depend on their family farms for their food security. In Site 1, migrant remittances are, however, essential for non-food expenses. An older woman commented, *'Local work opportunities are less and pay less. Our sons and nephews do not go to the jungles. We need cash and migrant members sending money is useful'*. In Site 3, with the tank restoration and the availability of water for irrigation, sufficient employment is being generated locally. Severe shortages, especially of women's labour, were reported during the peak agriculture seasons – paddy transplantation, cotton picking, harvesting and weeding – resulting in rising agricultural wages. Remittances are no longer central to household livelihoods, and male and female out-migration is limited to daily commuting or short-term, seasonal migration. Only young men are moving out of agriculture for aspirational reasons (Nandi et al. 2022).

In Sites 2 and 4, remittances remain central to the local economy, due to the lack of good quality, cultivable land. In Site 4, soil salinity has led to poor yields, making it difficult for households to survive on agriculture, without male remittances. Unlike in Site 3, cropping reduced from double cropping

to a single paddy crop, with increasing fallow or shrimp culture and decreasing opportunities for labour. A migrant man said, *'Working on salinity-affected land, we could only survive, not progress. Now, I earn ₹40,000 a month, and my family enjoys a better life'*, pointing to the vital role of remittances for financial stability and improving living standards. In Site 2, a long-established remittance economy, 65 per cent of the working population left behind, mainly women, engage in farming and allied activities (Census of India 2011), especially where investments have been made to improve agricultural productivity through women's federations. Agriculture here is regaining importance as an income source for women.

4.2.2. Reducing the dependency of men on agriculture

Except for Site 4, agriculture remains an important part of household livelihoods. What has changed is men's involvement, with women taking the primary responsibility for farming and farm management (cf. Chandrasekhar, Sahoo, and Swaminathan 2022). This shift is particularly evident in Site 3, with women confidently stating, *'We women are more capable'*. With mechanisation, men have largely withdrawn from daily farming activities, opting for non-farm work in neighbouring towns. In Site 2, the impact of male migration is even more pronounced. Lands owned by those who have permanently migrated lie uncultivated, with some being utilised by Dalit households for farming or foraging. It is only the irrigated lands that are given on lease or farmed by the women left behind.

In Site 1 and, interestingly, Site 4 too, men return home during critical farming periods like sowing and harvesting, with women managing the bulk of agricultural work. This seasonal engagement indicates a partial shift from agriculture. In Site 1, women noted during an FGD, *'Men return during Sohrai (annual harvest festival) and manage the post-harvest activities. Some also come home during sowing. How can we women do all the activities by ourselves?'* (cf. Rao 2008). A similar comment was made by women in Site 4: *'From many landholding families, men come to the fields during the sowing and transplantation time, as well as during the harvest festival of Pongal'*. Only a few had leased out their lands or sold them to shrimp farms.

5. Transformation of women's roles in agriculture: findings and discussion

We examine the transformations in women's roles because of male migration across three intermediate domains, namely, women's labour contributions, access to resources, and decision-making and two outcomes reflecting engagement with innovation, collective action and wider participation in the public-political sphere.

5.1. Recognition of women's labour contributions

Across sites, women perform multiple farm roles including land levelling, sowing, weeding, applying cattle dung as manure, managing vegetable crops, harvesting and carrying out post-harvest activities such as threshing, stacking, and cleaning in the case of paddy. Women's increasing participation in farming has had differential impacts on their work burdens. Nevertheless, recognition of their contributions seems to be rising.

Site 2 appears to be an exception with women's workloads having gone down slightly as agricultural work, crop and animal husbandry has reduced (fields left fallow, some leased out, and labour deployed for ploughing and other strenuous activities). Families have moved to rearing cows, which graze on their own, rather than buffaloes that are stall-fed. The opposite is the case in Site 1. When not working on their family farms, tribal women work as agricultural labour, collect firewood, leaves, and other forest produce for household consumption and sale, and manage livestock. While providing income and food, alongside their care and household management responsibilities, women's work burdens and time poverty have increased (cf. Mueller, Doss, and Quisumbing 2018).

I have 5 kids to care for... Kids help with livestock rearing, but everything else, including farm-related tasks, are on me. Labour is unavailable when needed, so I do all the work to survive... (a woman from Site 1).

In Site 3, with irrigated agriculture and the growing demand for women's labour, their roles and contributions are given importance and recognition. An interesting pattern is observed – women from educated households and the lower castes with medium to small landholdings (OBC, SC and ST) are recognised for their contributions and encouraged to participate in market-related activities, gaining knowledge about markets and prices in this process. Women from the upper castes (e.g. Reddy households) and large landowning households, however, still reported restrictive social norms and gender-based stereotyping, with their roles taken for granted.

In Site 4, the recognition of women's labour in agriculture differs significantly across caste and class dimensions. Many MBC women enter agricultural labour later in life, often after their children start schooling, to manage financial pressures, especially with their husbands working as migrant labourers. This shift from housewives to active agricultural workers marks a growing acknowledgement of their economic contributions, essential for managing household finances, and gives them the confidence to make decisions. Dalit women, on the other hand, have a long history as agricultural daily wage workers, their livelihoods dependent on paddy cultivation. Unlike MBC women, the migration of Dalit men has a limited impact on their roles, as in most Dalit households, male contributions to household expenses are low, and a substantive part of their earnings is spent on alcohol (cf. Mencher

1988). One Dalit woman commented, *'My husband is an alcoholic and a gambler, working as a migrant construction labourer but not fulfilling his responsibilities as the family head. To secure a better future for our children, I had no choice but to work. Through years of hard work, I've managed to save enough money to buy a piece of farmland in my name'*. Like in Site 1, women's work burden – domestic and agricultural – has increased after the migration of men, especially among the MBC households.

In Site 3, many migrant workers perceive their wives as the head of the household in their absence, recognizing the critical role women play in managing all aspects of family life. This shift in perception reflects a broader change in gender roles within these communities, where women are increasingly seen as the primary decision-makers and managers of household and agricultural responsibilities. In Sen's (1990) terms, 'perceptions are important not because they are definitive guides to individual interests and wellbeing (this they are not), but because the perceptions have an influence – often a major impact – on actual states and outcomes' (128). The barriers now appear to be more structural, as discussed in the next section.

5.2. Women's access to resources

5.2.1. Access to land

Land is a critical productive resource in rural agricultural communities, and often enables access to other resources such as credit, technology, and extension services. Across India, women are disadvantaged in terms of their ownership of land, with only 13.8 per cent of women classified as operational landholders in 2015–16, controlling 11.7 per cent of the cultivable land area (Gol 2020). The Indian Parliament passed an amendment to the Hindu Succession Act (1956) in 2005 to enable daughters to inherit agricultural land alongside sons. With rising migration, gradual shifts are now visible on the ground. A recent amendment to the Land Rights legislation in the state of Uttarakhand (Site 2) granted women the right to jointly hold inherited agricultural land along with their husbands (earlier it was only widows). It remains to be seen when and how this translates into real change on the ground. While widows have had legal rights for a while, in reality, few are landholders.

In the other sites, even though the land is registered in men's names, women take on significant agricultural responsibilities due to their assured access to family-owned and leased land. Mrs. Maha (name changed) from Site 4 manages 3.2 hectares of land, illustrating how existing land ownership and the ability to lease additional land enable MBC women here to expand their agricultural activities. The local Village Agriculture Officer told us that *'42 women own wetlands and 24 drylands. Ten women have joint ownership with their husbands'*. Their caste status provides them with relatively easier access to resources and networks, facilitating their involvement in farming. For

women, land titles are not an issue as long as the marriage survives; it is only if the marriage breaks down due to widowhood or separation that they confront serious challenges to their agricultural livelihoods (Rao 2008).

Dalit women, who have historically faced significant barriers to land ownership, are now beginning to lease land and engage in agriculture as farmers rather than labourers. Despite these advances, social stigma from upper-caste landowners and higher lease payments, especially for irrigated land, underscore ongoing caste-based discrimination and economic difficulties in accessing land resources. One Dalit woman from Site 4 commented, *'People belonging to the landowner's caste are upset that we got the land. The landowners who gave us land are now facing a social boycott'*. These challenges highlight the persistent inequalities in land access and the economic constraints that still limit women's potential to move from the status of 'labourer', paid or unpaid, to 'farmer'.

5.2.2. Access to technology and other non-tangible assets

Irrespective of agroecological variations and the pattern of migration, women in all sites opined that their access to other resources like machinery, services and public spaces, including schools, banks, and markets had improved. In Site 4, MBC and Dalit women have built strong local networks that provide crucial market-related information, yet the decline in public agricultural extension services and their inability to afford private services has restricted their access to agricultural innovations and broader networks. In Site 3, women of all castes have access to small, mechanised tools, agricultural extension services and other social institutions, earlier the preserve of the dominant castes. In Site 2, household structure remains a barrier for younger women in joint households from accessing technology and services. What becomes clear is that while lack of land titles is often blamed for women's exclusion from other productive resources, socio-structural factors such as the level of state provisioning, caste, or household structure play a part in shaping outcomes.

5.3. Women are making decisions

The impact of men's migration can be seen as reconfiguring traditional gender roles in farming, with women increasingly at the forefront of agricultural management and decision-making across caste and class lines. While this has empowered women to take on new responsibilities, it also underscores the challenges they face, particularly in communities where economic returns from agriculture remain low. We analyse data across two variables: household structure and the amount and timing of remittances, to generate a more nuanced understanding of the changes in decision-making patterns. While distance to the destination was earlier an important variable, in the context of wide prevalence and use of mobile phones, its significance has declined.

5.3.1. Household structure and position

Across sites, decisions related to the choice of crops, farming practices, or purchase of assets such as land, livestock, or farming equipment, continue to be made jointly by women and men. However, our data presented a more nuanced process. In Site 1, tribal women made decisions on crop choices, hiring of labour and mechanisation themselves or in consultation with their spouses over the phone. These were perceived as ‘small decisions’. ‘Big decisions’, such as the purchase of assets, were taken when men returned home. *‘How can I make decisions by myself? It is good to consult my husband in case things go wrong’*, commented a Santal woman. In this site, given the growing pressures to survive in the context of poverty, women seek cooperation with their spouses in decision-making rather than autonomy (Rao 2008).

A similar distinction between the purchase and sale of big assets and everyday farm-level decisions was reported by women in Site 2. Here differences were observed between women in nuclear families and those in joint families: the former are involved in negotiations on employing labour, leasing out land, and selling agricultural produce to the federation/traders, while in the latter, most of these decisions are taken by older women or non-migrant men. A young woman noted, *‘It is my mother-in-law who goes out to the market, attends community functions and sometimes meetings too. I do it only when she is unwell’*.

While agriculture is most precarious in Site 4, we found women’s participation shifting from peripheral roles to central decision-makers in agricultural activities across caste (MBC and SC) and class (landed and landless). This shift is more pronounced in MBC landed households, where women now manage farms independently but, at times, also lease additional land for cultivation. In contrast, some Dalit women have taken on the role of managing farms on leased land alongside working as labourers on other’s land, though in most instances this has been facilitated by external organisations. Women here deal independently with external institutions for hiring farm machinery or selling their produce to procurement centres, taking the support of extended family members only if needed.

In Site 3, prior to tank restoration, most women from landless small land-owning households made decisions regarding selling their agricultural produce (mostly vegetables) at the local markets or on the roadside along the highway, and on the use of the income earned. With higher production, men have started making most of the marketing decisions, barring widows or women whose husbands migrated afar. Changes in infrastructure, in this case, the provision of irrigation, has changed the household structure here, restricting male migration and, curtailing women’s decision-making.

5.3.2. Amount and timing of remittances

The literature suggests that the amount and timing of remittances are critical determinants of the impact on women’s roles (Maharjan, Bauer, and Knerr 2012; Paris et al. 2005). Remittances from male migrants have enabled women

left behind to adopt mechanisation and improved practices, hire male labour, lease land, or engage in livestock farming, leading to a rise in production and independent decision-making (Kapri and Ghimire 2020; Kawarazuka, Duong, and Simelton 2020; Lahiri-Dutt 2014; Radel et al. 2012). Yet, these changes are often temporary (De Haas and Van Rooij 2010; Pandey 2021), as lacking access to productive resources, women farmers could end up neglecting subsistence farming, even leaving land fallow, in the absence of their men (Padmaja et al. 2019). Decisions on the purchase of agricultural inputs and cattle were often delayed till the return of the migrant man, though with increased access to mobile phones, consultation is becoming easier (Choithani 2020).

Across our sites, except Site 3, migrant remittances contribute significantly to the income of rural households and are used to purchase food, invest in agricultural inputs and tools, repay debts or meet bulk expenses such as children's education, house construction, or saving for daughters' marriages. So, while in Site 1, a woman remarked, *'I am dependent on my husband for money [remittance] to buy essentials'*, in Site 4, the assured monthly income from remittances, even if delayed at times, enabled women to undertake developmental activities. They could also take loans from their SHGs with the confidence that they will be able to repay them. This is contrary to Green et al. (2019)'s findings from Kerala, noting the importance of timing and regularity of remittances for strengthening women's autonomy than the amount of remittance itself. In Site 2, remittance is the major source of income for families, allowing women the flexibility to focus on income-generation activities facilitated by the federation, shift to agricultural labour (in the absence of collective action), or focus on the social reproduction of their households, strengthening social networks and relations.

5.4. Final outcomes: innovation, collective action and public participation

We found a range of innovations on the ground, signifying women's increasing role in operational farm management decisions, many due to necessity, but usually facilitated by external interventions and collective action. Even in Site 1, the poorest amongst the study locations, there were instances where women used remittances to buy or rent small agricultural equipment such as pump sets or threshing machines, which helped reduce farm drudgery. Some women also adopted innovative vegetable cultivation methods, such as trellis farming after participating in NGO training programmes. *'We grow some vegetables in our kitchen garden (homestead lands) which is sufficient for our consumption for a major part of the year and helps in arranging immediate cash after selling in local markets'*.

Site 2 was selected for this study because of a women's federation formed with the support of the ILSP. The opportunity to participate in federation

activities and access its benefits, however, varied across caste categories. Dalit women have smaller landholdings, limiting their potential for surplus production to be sold to the federation. One Dalit woman commented during an FGD, *'Agricultural work is becoming very difficult now as there is always a terror of wild animals (who destroy the produce), then we have very small land holdings, just enough for our subsistence. From where can we have surplus for the federation?'* Women from the general castes, however, have more land and irrigation sources. However, given the pressure on women's time, it is only elderly women from joint families and a few young women from nuclear families who engage in value addition activities, facilitated by the federation. The role of the federation in enabling women to persist and progress is reinforced by observations from areas where there is no federation. One woman from such a village shared, *'we do not get to know about government schemes, programmes, techniques as no one comes to us with this information, and men also do not share with us.'*

In Site 3, with the tank restoration, there has been a shift from rainfed agriculture to commercial crops like paddy, cotton and chilli, all requiring women's labour for harvesting, cleaning and sorting before marketing. Women's strong social and kinship networks and community support helped them bargain for higher wages, alongside women's SHGs that empowered them financially and socially. Women's decision-making is not limited to farm activities and includes reproductive roles like the education of children, marriages of girls and purchase of small household assets. In Site 4, Dalit women have been enabled through SHGs and collectives, facilitated by a civil society organisation, to lease-in land, access credit from banks and establish wider networks. Their collective power has enabled them to take the lead in agricultural production by sharing labour and other resources.

Yet, across ecologies, women's participation in the public sphere remains limited. Some women SHG leaders in sites 3 and 4 were consulted by the *gram panchayat* when requesting funds from the government, yet they didn't engage with local politics in any formal way. Site 2 is an exception in this regard. Despite household responsibilities, the long-duration migration of men promoted women's engagement with paid productive roles in the federation, dairying, and leasing out land, which gave them the confidence to engage with local governance and politics through the *Panchayat Raj* Institutions (local government).

5.5. Women's roles in migrant-sending communities

What emerges from our discussion is that the pattern and nature of migration shapes women's role in agricultural production, which includes not just labour contributions, but also access to and control over assets, decision-making, participation in women's groups and in the wider public

sphere. In contexts of seasonal migration, as in Sites 1 and 4, women manage household farms, and also engage in other activities for household survival and growth. Experiences here are differentiated by marital status and caste, respectively, with married men in Site 1, especially those with children, visiting home at regular intervals, and supporting their wives with agricultural work during the planting and harvesting seasons and in Site 4, this is true for men from landed households. Site 3 is currently witnessing short-term migration or daily commuting by men, who therefore remain close at hand to take major decisions, shrinking in some ways the spaces for women's agency. In Site 2, with a long history of migration, women are largely independent decision-makers, managing their farms and working with the federation. Here the household structure matters, with younger women in joint families having relatively little autonomy as compared to older women or those in nuclear households. The key insights are summarised in [Table 2](#).

By applying an intersectional gender lens, researchers, policymakers, and practitioners can develop a more comprehensive understanding of the complex issues surrounding migration and agriculture. This understanding can be used to co-create more effective, equitable and inclusive solutions that address the unique challenges created by diverse migration patterns in agriculture.

6. Conclusion

The findings from this study clearly point to the nuances of how gender, caste/ethnicity, age and household structure intersect to shape the experiences of women left behind in migrant-sending communities in relation to agriculture and household livelihoods. While there is often a stereotyping around women's work burdens, lack of access to and control over resources, and limited decision-making, we find the realities on the ground much more differentiated. The existence of heterogeneity in women's experiences and the different ways in which they exercise agency, even within a country like India, is an important finding and needs to be taken into account in planning processes. Further, the paper also challenges the truism that livelihoods are entirely driven by remittances in migrant-sending communities.

While women in migrant-sending communities take up additional responsibilities in practice, many women seek to maintain a degree of cooperation with their men, seeking shared lives and responsibilities, despite the distance. While migrant men hardly refute women's decisions, the consultation process serves to ensure men's interest and involvement in the household. Young women in Uttarakhand with education are clear that they wish to move with their husbands and build a life together, rather than stay behind. While patriarchy can be oppressive, as can marriage as a social institution, for many of these women, with few options outside marriage, 'bargaining with patriarchy' appears to be the best option (Kandiyoti 1988).

As there seems to be a growing recognition of women's contributions to agriculture and household livelihoods, many men are happy for their wives to invest their remittances in labour, inputs and technology, apart from social reproduction and status production (Papanek 1979). Women's SHGs promoted by the state and collectives facilitated by civil society organisations have played a critical role in supporting women to deal with adversity, innovate and even enhance production. They have enabled access to land, credit, training and information, and expanded women's spaces of engagement beyond the home (Harrington et al. 2024). In Site 2, it is only through initiatives by the women's federations, that the production of local, nutritious, agricultural produce has increased, leading to healthier consumption practices, especially by women and children.

The persistent gap lies in the absence of specific agricultural policies that can further enhance women's participation and decision-making in agriculture. The NRLM seeks to strengthen women's livelihoods but doesn't necessarily prioritise their identity as 'farmers'. Recently announced agricultural schemes such as the National Mission on Agricultural Extension and Technology make special provisions for women farmers, but land titles are mandatory for access. This could clearly exclude a majority of the 'left behind' women discussed in this paper, who are in de facto control of all agricultural operations on their smallholdings but lack legal titles. The recent draft of the national policy on farmer producer organisations also doesn't focus explicitly on the gender and intersectional dimensions of the farming enterprise. It is time to go beyond 'pro-women' schemes, seen as a form of welfare, to ensure women's rights to access and control productive resources, building their capacities to act and overcome unequal gender norms. Only such structural change can ensure a genuine transformation of women's roles in agriculture, not just in practice, but also in letter.

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A. Appendix

A.1. Methodology details

Transforming India's Green Revolution by Research and Empowerment for Sustainable food Supplies (TIGR2ESS), was a Global Challenges Research Fund project (<https://tigr2ess.globalfood.cam.ac.uk/>). The broader goal of the project was to understand the constraints and opportunities that exist in making agriculture economically viable, socially just, and ecologically robust.

The research focused on various aspects of rural livelihoods, agricultural practices, market engagement, environmental impacts, the role of women in agriculture, and the policy and institutional context. Specific research questions guided in-depth investigations at different locations, tailored to map and explore pressing issues in each field site. This was achieved by actively engaging agrarian and rural communities in selected sites in India, acknowledging their agency, knowledge, and experience while recognizing their internal diversity and spatial differences. Rural communities are usually structured on the axes of class, caste, gender, ethnicity, and/or religion and their configurations vary by agroecological location, political and policy context, and historical developments. These manifest in the relations between households and in gender dynamics within households.

Prior to selecting the sites, a detailed socio-demographic analysis was conducted at the district, block, and village levels, and village profiles were constructed. Protocols to conduct the field study were developed in a joint workshop, and similar methods for Sites 1, 3, and 4 (Bihar, Telangana, and Tamil Nadu, respectively) were designed considering the contextual realities of the different sites. Site 2 (Uttarakhand) was a part of a separate sub-study and is included in this paper to highlight the role of women's collectives as a unique example of a response to migration and as a comparator. Uttarakhand has a long history of male out-migration and women's role in agriculture has been established for the last 50 years.

Additional details of selected districts are presented in [Table A1](#), and details of the selected blocks are presented in [Table A2](#).

Table A1. Characteristics of the selected districts.

	Site 1 Bihar	Site 2 Uttarakhand	Site 3 Telangana	Site 4 Tamil Nadu
Study district	Jamui	Almora	Warangal	Mayiladuthurai*
Average operational holdings (Ag.Census, 2015)	0.38	0.78	0.80	0.94
Normal annual rainfall (millimeters)	1153	1305	925	1426.6
Roads (length in Km)	828	1104.73	2768	3136.85
Proportion of women involved in agriculture (2011 census)	26.72	64.71	36.40	17.56
Proportion of men involved in agriculture (2011 census)	73.28	35.29	63.60	82.45
Literacy rate	62.24	53.06	57.13	52.84
Men	37.76	46.94	42.87	47.16
Women				

*Since Mayiladhuthurai is a newly formed district, statistics of Nagapattinam the district from which it was formed have been reported.

Table A2. Profile of the study area.

	Site 1 Bihar	Site 2 Uttarakhand	Site 3 Telangana	Site 4 Tamil Nadu
Study district	Jamui	Almora	Warangal	Mayiladuthurai
Block/Mandal	Chakai	Dhaura Devi Bhaisiya Chhana	Atmakur	Sirkazhi
Ecology	Sub-humid hot ecoregion	Mountain ecology	Semi-arid tropics	Coastal
<i>Panchayat</i> (Village Council)	Two Tribal Village <i>Panchayats</i>	Two Mountain Village <i>Panchayats</i>	Two Semi-Arid Village <i>Panchayats</i>	One Coastal Village <i>Panchayat</i>
Population in each <i>Panchayat</i> (approximate figures)	i. 9187 ii. 13,050	i. 850 ii. 1042	i. 2254 ii. 4225	6853
Literacy rate in each <i>Panchayat</i>	i. 53% ii. 57%	i. 75% ii. 77%	i. 49% ii. 56%	73.73%
Other details	The communities in the four villages depend on rain-fed agriculture for subsistence. Additionally, they work as agricultural labour (24%) and wage labour (51% of households). Men (48%) practice seasonal migration for unskilled or semi-skilled jobs	The communities in the two villages have agriculture as the main source of livelihood, though migration is quite high affecting more than 50% of the families	In village House Buzurg, about 70% of the population are stone cutters or agricultural labourers. In villages Katakshapur and Neerukulla villages, about 70% are into farming and the rest are agricultural labourers	More than 57% are agricultural labourers. Unemployed or under-employed farmers and agricultural labourers often migrate to find better opportunities and higher wages in the non-farm sector. In 2019, there were 250 instances of inter-state migration, 28 of intra-state migration, and 66 of overseas migration

(Continued)

Table A2. Continued.

	Site 1 Bihar	Site 2 Uttarakhand	Site 3 Telangana	Site 4 Tamil Nadu
Nature of farming	subsistence rain-fed agriculture	subsistence rain-fed agriculture	Mostly rain-fed agriculture Irrigation sources include canal water from Katakshapur tank; borewells, and water from village ponds	Semi-commercial, dependent on canal water and rain-fed
Nature of farmers	Smallholders and landless	Smallholders	Smallholders, landless	Smallholders and landless
Primary crops cultivated	Paddy	Millets and wheat	Paddy, cotton, and maize	Paddy
Type of migration	Seasonal migration	Semi-permanent, and permanent migration	Seasonal migration observed in House Buzurg and Neerukulla; daily out commuting in Katakshapur village during the lean season	Seasonal migration
Who migrates?	Men predominantly	Men predominantly	Landless labour, both men and women. In House Buzurg, only Muslim community households migrate	Men predominantly
Migration destination	Interstate	Intrastate, Interstate, and overseas	Neighboring villages, Interdistrict, mostly within Telangana, sometimes Gujarat and Maharashtra	Interstate, intrastate, and overseas
Nature of work	The majority work as domestic helps or in hotels and restaurants Quite a small percentage work in formal sectors like companies, schools and colleges, clinics and hospitals	Farming and non-farming. Non-farming work includes daily wage labour	Farming and non-farming Non-farming work includes construction and other labour	Men opt for jobs as masons at construction sites, especially temples, while young women opt for jobs in textile mills

Figures from a household survey conducted as a part of the project in the same sites, also reported in Sinha et al. (2022).