

Agriculture in Crisis: Mapping the Gender Composition of the Migrant Workforce amidst Land Fragmentation in Rural India

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ABSTRACT

This research paper investigates the deepening agrarian crisis in rural India, with a specific focus on the gendered aspects of migration amid the growing fragmentation of landholdings. Over the past three decades (1990–91 to 2020–21), Indian agriculture has experienced significant structural changes, including a sharp increase in marginal and small landholdings, a consistent decline in average operational land sizes, and insufficient food grain production at the household level, particularly among marginal farmers. Marginal farmers now account for nearly 69% of all operational holdings and increasingly contribute to food grain cultivation; however, their land productivity remains insufficient to meet their basic household consumption needs. This situation forces a considerable portion of the rural workforce to seek alternative livelihoods outside of agriculture.

The study also reveals a changing pattern in the agricultural workforce, marked by a declining proportion of cultivators and a rising number of agricultural labourers. This shift underscores the growing vulnerabilities within the agrarian economy and the increasing casualisation of rural employment. Importantly, the research highlights a critical yet often overlooked trend: the feminisation of migration within the agricultural sector. Contrary to the traditional view of migration as a predominantly male phenomenon, recent data indicate that women now outnumber men among migrant agricultural workers, cultivators, and labourers. This trend reflects a strategic adaptation by rural households in response to economic stress.

Drawing exclusively on secondary data, the study combines empirical findings with a gender-sensitive analytical framework, situating the migration imperative within broader processes of rural economic transformation. The paper advocates for policy interventions to address land fragmentation, enhance the sustainability of smallholder agriculture, and recognise the crucial role of women in both farming and migration dynamics, aiming to ensure a more equitable and sustainable rural development trajectory.

KEYWORDS: Land fragmentation, marginal farmers, agricultural migration, rural workforce, gender composition.

INTRODUCTION

India's agrarian sector has historically been the foundation of its economy, serving as the main source of livelihood for a significant portion of the population. Even in the 21st century, agriculture continues to employ nearly 45% of India's workforce, contributing to food security and rural development. However, the rural agricultural landscape in India is currently undergoing a profound transformation accompanied by a deepening crisis. This crisis is multi-dimensional, shaped by factors such as the structural decline of agriculture, shrinking profitability, rising cultivation costs, climate vulnerabilities, and, most significantly, land fragmentation. Together, these issues have compelled many rural households, especially younger and economically active individuals, to migrate as a coping strategy. Within this migratory trend, gender plays a critical role in influencing the patterns, causes, and consequences of migration in the agricultural sector (Deshingkar & Akter, 2009; Rao et al., 2020).

Land fragmentation, a long-standing and escalating problem in rural India, refers to the division of agricultural landholdings into smaller, often economically unviable plots. According to the Agriculture Census (GovI, 2021), the average size of operational landholdings decreased from 1.55 hectares in 1990–91 to 1.08 hectares to 1.06 hectares in 2020–21. This decline is attributed to demographic pressures and inheritance practices. The implications of such fragmentation are dire; it not only reduces agricultural productivity and economies of scale but also makes farming unprofitable, thereby driving distress migration from rural areas. In many parts of India,

this has led to a systematic withdrawal of labour, particularly male labour, from agriculture in search of alternative livelihoods in urban or peri-urban areas (Rawal & Swaminathan, 2011).

The crisis in agriculture is not gender-neutral. While men predominantly engage in seasonal or long-term outmigration, women increasingly bear the burden of farming, often without ownership rights, decision-making power, or adequate institutional support. This feminisation of agriculture is an underexplored yet crucial aspect of agrarian transformation in India (Agarwal, 2012; Sugden et al., 2021). As the male workforce migrates due to unviable agricultural conditions, women's contribution to agriculture becomes indispensable, though often underappreciated and undercompensated. In some regions, women are also increasingly engaging in migration due to rising living costs, dwindling income from farming, and a widening aspirations gap, particularly among young rural females (Mazumdar et al., 2013). Thus, mapping the gender composition of the migrating agricultural workforce is essential to understanding how agrarian distress is reshaping rural India.

In the last two decades, scholarly attention has shifted toward migration as both a symptom and a strategy for coping with the agrarian crisis (Bremner, 2013; Tumber, 2018). Migration is no longer merely a seasonal or cyclical phenomenon; it is becoming semi-permanent or permanent in many contexts. Data from the National Sample Survey Office (NSSO) and the Census indicate a steady increase in rural-urban migration, especially among the working-age population. According to the 2011 Census, over 450 million Indians were migrants, making up 37% of the total population, with a significant proportion of rural males migrating for work and an increasing number of rural females migrating as accompanying spouses or for economic reasons (Census of India, 2011; Desai & Banerji, 2008). However, these aggregate figures obscure significant disparities related to region, caste, and gender. Migration patterns are closely linked to landholding size, caste location, education, age, and access to capital—factors that are all deeply influenced by gender in rural India (Kaur, 2020).

Understanding the gendered dimensions of migration in the context of the agrarian crisis requires a closer examination of the relationship between landholding patterns and labour mobility. While small and marginal landholders (those with less than 2 hectares) constitute over 85% of India's farming population, they also represent the most vulnerable group in terms of income instability and climate shocks (Chand et al., 2011). These groups are more likely to adopt migration as a risk mitigation strategy. However, when migration becomes male-dominated, it alters intra-household labour dynamics, leaving women to manage the household, farming, and caregiving roles simultaneously, without corresponding social recognition or policy support (Kelkar, 2009).

Land fragmentation and male outmigration are contributing to a significant transformation in rural socio-economic structures. Women, increasingly assuming agricultural responsibilities, often become the de facto heads of households. However, their lack of access to land titles, credit, irrigation, markets, and extension services severely limits their productivity (Agarwal, 2018). This phenomenon, described as 'feminisation without empowerment,' raises critical questions about the gender equity of India's rural development policies. Recent studies from Uttar Pradesh, Bihar, Odisha, and Madhya Pradesh indicate that women-headed agricultural households, resulting from male migration, frequently experience a heavier workload, social isolation, and economic insecurity (Jeyaranjan, 2011; Rao, 2019).

At the same time, a noticeable trend of female migration has emerged, particularly among young women seeking employment in informal sectors such as domestic work, garment manufacturing, and construction in urban areas (Neetha, 2004). Unfortunately, these migrants often lack social protections, rendering them vulnerable to new forms of exploitation.

Despite the profound impacts of these shifts, official data sources like the NSSO, PLFS (Periodic Labour Force Survey), and Census often fail to capture the complexity of gendered migration. Many surveys categorise women migrants as 'accompanying family members' rather than recognising them as economic agents, which undervalues their labour mobility and agency (Deshingkar & Start, 2003). In contrast, village-level and longitudinal ethnographic studies have highlighted the growing assertiveness and autonomy of rural women migrants, with many now migrating independently or as part of women's groups for work (Carswell & De Neve, 2014). This situation underscores the urgent need to disaggregate migration data by gender, purpose, duration, and landholding status to better understand the intersection of agrarian distress, land fragmentation, and gendered labour mobility.

The COVID-19 pandemic further exacerbated these vulnerabilities. The mass return of rural migrants during the 2020 lockdown highlighted the challenges faced by migrant workers, especially women, who lost their jobs,

faced food insecurity, and encountered barriers to healthcare and social support (Srivastava, 2020). For women migrants, the pandemic led to not only economic losses but also heightened risks of domestic violence and increased unpaid care work. Post-pandemic analyses indicate a partial remigration trend, where many migrants opted to remain in villages, intensifying the pressures on fragmented agricultural lands and unpaid female labour (Sharma, 2021).

In this context, this research paper aims to examine the gendered patterns of migration within the rural agricultural workforce arising from agrarian distress related to land fragmentation. It also seeks to explore the gender composition of the migrating workforce. Specifically, what are the emerging trends in female migration from rural areas? What gaps exist in policies that recognise and support gendered labour mobility in rural India? The primary objective of this research is to critically analyse the gendered dimensions of migration stemming from the agrarian crisis, focusing on land fragmentation in rural India. It intends to investigate how the declining viability of agriculture—evidenced by shrinking landholdings and diminishing returns—triggers migration decisions within rural households and how these decisions are influenced by gender. More specifically, the study focuses to map the gender composition of the migrant workforce to better understand the differentiated roles of men and women in both migration and agricultural labour. It examines how male-dominated migration reshapes gender roles in agriculture, resulting in the increasing feminisation of agricultural labour and the emergence of women as *de facto* farm managers.

The primary concern is to provide a comprehensive, gender-disaggregated analysis of migration trends within the broader context of India's agrarian crisis. By focusing on the interplay between land fragmentation and gendered migration, this paper seeks to contribute to both academic and policy discussions on rural livelihoods, gender justice, and inclusive agrarian development. Ultimately, understanding the gendered dimensions of migration in the face of agrarian distress is not just an academic issue; it has significant implications for rural development, social equity, and national food security. The feminisation of agriculture without structural support, the marginalisation of women migrants, and the erosion of land-based livelihoods due to fragmentation necessitate an urgent re-evaluation of India's rural and migration policies. Implementing gender-sensitive protections, establishing migration tracking systems, and providing targeted skill-building for rural women are critical for ensuring a resilient and equitable rural economy amidst ongoing agrarian transitions.

RESEARCH METHODOLOGY AND DESIGN

This study adopts a mixed-methods approach grounded entirely in secondary data sources, employing a longitudinal and comparative design to examine the transformation of rural agrarian livelihoods and the gendered dimensions of migration in the context of land fragmentation and agrarian distress in India. Spanning three decades—from 1990–91 to 2020–21—the analysis captures key structural changes in Indian agriculture, including the impacts of post-liberalisation reforms, intensifying land fragmentation, and the evolution of rural labour markets.

The methodology is based on the systematic collection, compilation, and analysis of secondary data from nationally representative and longitudinal sources. Key data sources include the Agricultural Census (1990-91 to 2020-21) to track trends in landholding sizes, operational holdings, and the extent of fragmentation across different regions and farming classes. It also incorporates the Census of India (1991, 2001, and 2011) for demographic and migration data disaggregated by gender, rural-urban classification, and economic activity. Additionally, relevant rounds of the National Sample Survey Office (NSSO)—particularly those focusing on employment, migration, and land ownership patterns (such as the 55th, 61st, 64th, and 68th rounds)—are utilized along with the Periodic Labour Force Survey (PLFS) data from 2017-18 onward for updated labour force and migration indicators with gender disaggregation. This is complemented by reports from the NITI Aayog, the Ministry of Rural Development, the Ministry of Agriculture and Farmers' Welfare, and academic publications from peer-reviewed journals.

As this research relies exclusively on secondary sources, it draws from validated and widely recognised datasets, ensuring reliability through critical cross-verification of multiple sources. The empirical findings are integrated with established theoretical perspectives to provide a comprehensive analysis. The study adopts a gender-sensitive approach, systematically examining and interpreting both female and male migration patterns within the broader framework of rural socio-economic transformation.

LITERATURE REVIEW

India's agricultural landscape has undergone a significant transformation over the past few decades, influenced by demographic pressures, agrarian reforms, and ongoing economic challenges. A central issue within agrarian distress is the fragmentation of landholdings, which is closely linked to population growth, inheritance practices, and the legal structures governing land distribution. This fragmentation has resulted in a rapid increase in the number of marginal (< 1 ha) and small landholdings, defined as those between 1-2 hectares, across the country. According to the Agriculture Census of India, the share of marginal holdings rose from 62.9% in 1990-91 to 68.5% in 2015-16, representing nearly 86.9% of total operational holdings by marginal and small holders in 2020-21 (GovI, 2021). This division of land has made agriculture increasingly unviable for many rural cultivators, particularly those dependent on rain-fed and low-resource farming.

Scholars like Basole and Basu (2015) argue that the decline in average land size directly impacts productivity, investment, and the ability to generate surplus. Small and marginal farmers often struggle to achieve economies of scale, face limited access to credit and technology, and remain vulnerable to market fluctuations. The situation is further complicated by structural constraints such as poor irrigation, rising input costs, and inadequate institutional support. According to Chand et al. (2011), the limited opportunity for mechanisation on small plots, combined with shrinking profitability, has resulted in stagnation in foodgrain production, particularly among marginal farmers who make up the majority of the agricultural workforce.

While India has achieved national self-sufficiency in foodgrain production, primarily due to the Green Revolution, this overall success conceals significant regional and class disparities. Field-level losses, estimated at 3.2% of total production (GovI, 2021), exacerbate the gap between gross production and actual food availability. Reports from the National Sample Survey Office (NSSO, 2014) and the FAO indicate that, although foodgrain output has increased, per capita availability in some rural areas has either stagnated or declined due to unequal access and local production constraints. As marginal farmers struggle to produce enough for subsistence, let alone for market surplus, their vulnerability becomes increasingly apparent, leading to changes in occupation and migration patterns.

Distressing agricultural conditions have led to a significant wave of rural out-migration, often referred to as 'distress migration' in contemporary literature (Deshingkar & Start, 2003). The agrarian economy, which once absorbed a majority of the labour force, has increasingly failed to provide stable employment and income security. This has resulted in the outflow of both cultivators and agricultural labourers. Between 1991 and 2011, the number of cultivators declined by over 15 million, while the number of agricultural labourers increased by approximately 40 million. This reflects a shift from self-employment to wage dependence, resulting in a detachment from the farm economy (Census of India, 2011; Himanshu, 2011).

Research by Srivastava and Sasikumar (2003) and Bhagat (2017) indicates that migration patterns in rural India are increasingly influenced by push factors such as landlessness, joblessness, and income insecurity, rather than pull factors like urban opportunities. Seasonal and circular migration has become a crucial coping mechanism for the rural poor, particularly during agricultural lean seasons. While migration destinations vary, they typically include urban informal sectors, construction, brick kilns, and low-paid service work.

The gender dynamics of this migration process are attracting increasing scholarly attention. Earlier literature largely assumed that rural migrants were predominantly male, but more recent studies highlight a feminisation of agricultural labour alongside a masculinization of migration. As men seek off-farm employment, women are often left behind to manage farms, households, and community responsibilities (Agarwal, 2012; Singh, 2020). However, this feminisation frequently does not come with increased decision-making power, access to credit, or land ownership rights. In many cases, women continue to work as unpaid or underpaid labourers, burdened with both productive and reproductive responsibilities (Kelkar, 2009).

The composition of migrants has also become increasingly diversified. Data from the NSSO (2007-08) and the Census (2011) reveal a growing share of female migrants, not only for marriage but increasingly for employment, particularly in states like Kerala, Maharashtra, and Delhi. Scholars such as Neetha (2004) and Garikipati (2009) show that female migrants, often engaged in domestic work, the garment industry, and informal sectors, significantly contribute to household income, despite facing exploitation and a lack of labour protections. This trend indicates a transformation in traditional gender roles, though it remains marked by inequalities and systemic exclusion.

Furthermore, studies highlight that land fragmentation indirectly contributes to the migration of both male and female labourers. Research by Rao (2006) and Venkateswarlu (2017) suggests that as landholdings become smaller and less productive, families diversify risks by sending younger members, often males, to urban centres. Simultaneously, female family members are left to sustain farming activities or are pushed into wage labour, either within or outside the village. Such shifts not only alter the gender composition of the rural workforce but also have significant implications for food security, rural demography, and social structures.

Empirical studies reveal a spatial gradient in the relationship between land fragmentation and migration. States like Bihar, Uttar Pradesh, and Madhya Pradesh, characterised by high land pressure, poor irrigation, and weak agrarian institutions, exhibit high levels of rural out-migration (Tumbe, 2012). In contrast, better-performing states like Punjab and Haryana have experienced slower out-migration but faster mechanisation, which excludes both men and women from traditional agrarian labour markets.

The literature establishes a close link between land fragmentation, production insufficiency, and the migration of the agricultural workforce in rural India. The changing gender composition of migrants is both a consequence and a response to the broader agrarian crisis. Women, once overlooked in migration discussions, are now central to understanding the shifting dynamics of rural livelihoods. However, policy responses remain inadequate in addressing these interconnected challenges. There is a pressing need for gender-sensitive rural development strategies and institutional support mechanisms that tackle both the economic and social implications of land fragmentation and migration.

RESULTS AND DISCUSSIONS

Analysis of Landholdings Distribution and Average Size of Landholding under Foodgrain Crops

Over the past three decades, India has undergone a significant transformation in the distribution of landholdings for foodgrain crops. A noticeable trend of land fragmentation is observed, particularly with the increasing dominance of marginal and small landholders. The share of marginal landholdings has risen notably, increasing from 59.4% in 1990-91 to 68.6% in 2020-21. Additionally, the area under foodgrain crops managed by marginal farmers grew from 18.5% to 29.2% during this period. This suggests a growing involvement of small-scale farmers in the nation's foodgrain production. However, the increase in the area they farm does not correspond to their numerical share of landholdings, highlighting ongoing disparities in land access. These disparities raise concerns about the long-term viability and productivity of these smaller holdings.

Table 1: Distribution of Landholdings Number & Area under Foodgrain Crops (%) - INDIA

Landholding Size Category	1990-91		2000-01		2010-11		2020-21	
	No.	Area	No.	Area	No.	Area	No.	Area
Marginal (< 1 ha.)	59.4	18.5	63.0	22.3	67.1	25.7	68.6	29.2
Small (1.0-2.0 ha.)	18.8	19.2	18.9	21.4	17.9	22.1	18.3	23.4
Semi-Medium (2.0-4.0 ha.)	13.1	24.1	11.7	23.6	10.0	23.1	9.0	21.0
Medium (4.0-10.0 ha.)	7.1	25.2	5.4	22.1	4.2	20.1	3.6	17.6
Large (> 10.0 ha.)	1.6	13.1	1.0	10.2	0.7	9.0	0.5	6.6
All Holdings	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Small landholders have maintained a relatively stable proportion, with a slight change from 18.8% in 1990-91 to 18.3% in 2020-21. However, their share of cultivated area has improved modestly, increasing from 19.2% to 23.4%. This signifies a limited yet notable gain in operational scale. Together, marginal and small farmers now constitute nearly 87% of total landholdings and manage over half of the total area under food grain crops. This

underscores their critical role in food production, despite facing structural challenges such as limited access to capital, technology, and institutional support.

In contrast, medium and large farms have experienced a steady decline in both numbers and area. Semi-medium holdings (2–4 hectares) decreased from 13.1% to 9.0%, with their share of cultivated area falling from 24.1% to 21.0%. Medium holdings (4–10 hectares) saw an even steeper decline, declining from 7.1% to 3.6% in number and from 25.2% to 17.6% in area. The decline was most pronounced among large holdings (> 10 hectares), which dropped from 1.6% of total holdings and 13.1% of land in 1990–91 to just 0.5% and 6.6%, respectively, by 2020–21.

This erosion of larger and medium holdings, combined with the concurrent expansion of marginal holdings, reflects a broader shift in India's agrarian landscape. Land is increasingly being split into smaller and less viable units due to demographic pressures and inheritance patterns.

**Table 2: Average Size of Landholdings under Foodgrain Crops Cultivation (ha)
- INDIA**

Landholding Size	1990-91	2000-01	2010-11	2020-21
Marginal (< 1 ha)	0.37	0.34	0.37	0.37
Small (1.0-2.0 ha)	1.22	1.08	1.19	1.11
Semi-Medium (2.0-4.0 ha)	2.21	1.93	2.21	2.04
Medium (4.0-10.0 ha)	4.23	3.88	4.54	4.30
Large (> 10.0 ha)	10.09	9.51	12.23	11.21
Overall	1.20	0.95	0.96	0.87

The average size of landholdings dedicated to food grain cultivation, as shown in Table 2, underscores the trend of declining farm sizes across nearly all categories. Marginal farmers have consistently worked with very small plots, with the average size remaining around 0.37 hectares from 1990-91 to 2020-21. This static figure indicates a saturation point of fragmentation, where further division of land threatens the viability of cultivation. At this scale, subsistence agriculture becomes unsustainable, often forcing farmers to seek alternative income sources or migrate for work.

Small landholdings show minor variations in average size, decreasing from 1.22 hectares in 1990-91 to 1.11 hectares in 2020-21. Similarly, semi-medium holdings declined from 2.21 hectares to 2.04 hectares, while medium holdings rose slightly from 4.23 hectares to 4.30 hectares over this period, with a temporary increase in 2010-11. In contrast, large holdings saw an increase in average size, rising from 10.09 hectares to 11.21 hectares, peaking at 12.23 hectares in 2010-11. This increase indicates some degree of land consolidation among wealthier or institutional owners, even as the majority of the farming population works on increasingly fragmented plots. Overall, the average size of landholdings dropped significantly from 1.20 hectares in 1990-91 to 0.87 hectares in 2020-21. This decline reflects the combined effects of marginalisation and shrinking operational sizes, posing serious implications for agricultural investment, mechanisation, and long-term productivity. Smaller holdings are typically less equipped to adopt modern farming technologies, access credit, or implement crop diversification strategies. Their vulnerability is further exacerbated by environmental and market uncertainties, making them more susceptible to agrarian distress.

With marginal holdings now accounting for nearly 69% of total landholdings, maintaining food self-sufficiency at the household level becomes increasingly challenging. The decreasing size of farms also leads to underemployment of family labour and diminishing returns on agricultural land. This situation has significantly contributed to the migration of rural populations, particularly among the younger male workforce, who seek more stable livelihoods elsewhere. Consequently, women are often left behind to manage the land, resulting in a growing feminisation of agriculture. Women's increased involvement in farming, frequently without adequate recognition or support, highlights the urgent need for gender-sensitive agricultural policies and targeted interventions.

The combined data from the tables 1 and 2 paints a stark picture of the structural challenges facing Indian agriculture. The trends of rising marginalisation, declining average landholding sizes, and increasing demographic

pressure on limited land resources suggest a future where rural livelihoods may become increasingly precarious, leaving marginal and small landholders in India at significant risk.

Foodgrain Production and Sustainability

Foodgrain production (in kilograms) across various average landholding sizes in India from 1990–91 to 2020–21 shows significant disparities in agricultural output among different classes of landholders. These disparities have particularly serious implications for marginal farmers and migration patterns. The production figures account for a reduction of 3.2% due to field-level wastages that occur during processing and the procurement of grains.

Table 3: Foodgrain Production (Kg) on the Average Size of Landholdings under Foodgrain Crops - INDIA

Items	1990-91	2000-01	2010-11	2020-21
i. Marginal (< 1 ha.)	494	535	691	855
ii. Standard Requirement Per Household [Calculation based on ICMR Recommendation (165.56 Kg/Capita/Year)]	927	877	811	778
iii. Small (1.0-2.0 ha)	1630	1700	2223	2564
iv. Semi-Medium (2.0-4.0 ha)	2952	3038	4129	4712
v. Medium (4.0-10.0 ha)	5651	6107	8482	9931
vi. Large (> 10.0 ha)	13479	14968	22849	25891
vii. Overall Average Size	1603	1495	1794	2009

The first notable trend is the consistently low food grain output from marginal landholdings (< 1 ha). In 1990–91, the average production on these holdings was 494 kg, which increased to 855 kg by 2020–21. Despite this nearly doubling over three decades, production levels remain well below the standard food grain requirement per household. This requirement declined from 927 kg in 1990–91 to 778 kg in 2020–21, due to demographic factors, i.e. decrease in the average size of household. Even with this lowered threshold, marginal farmers are not producing enough food to meet the basic subsistence needs of their households, highlighting a deep-rooted issue of food insecurity among the smallest cultivators.

This inadequacy in food grain availability at the household level directly relates to economic vulnerability, pushing marginal farmers into distress-driven migration. With insufficient yield to feed their families, let alone generate a surplus for market sale, these farmers often resort to seeking alternative livelihoods through temporary or permanent migration to urban or peri-urban areas. This trend is particularly pronounced among male members of agricultural households, leading to a gendered restructuring of agrarian labour, where women increasingly take on responsibilities on the farm, often with less family support and social security.

In contrast, small (1.0–2.0 ha) and semi-medium (2.0–4.0 ha) landholders tend to perform comparatively better. Their average production rose from 1,630 kg to 2,564 kg, and from 2,952 kg to 4,712 kg, respectively, between 1990–91 and 2020–21. These outputs exceed subsistence thresholds, allowing for market engagement, reinvestment, and a degree of economic resilience. This relative advantage means there is lower out-migration pressure among these farmers, although the broader economic stagnation in rural areas continues to affect their prospects.

For medium (4.0–10.0 ha) and large (> 10.0 ha) holdings, production volumes are markedly higher. In 2020–21, medium-sized farms produced an average of 9,931 kg, while large farms yielded 25,891 kg. These figures illustrate the positive correlation between land size and production potential, especially in an input-intensive system that favours economies of scale. However, such large landholders represent a shrinking share of the farming population, as previous data indicates, and their experiences do not reflect those of the majority of cultivators.

The overall average food grain production per holding has risen from 1,603 kg in 1990–91 to 2,009 kg in 2020–21, but this average masks the inequalities embedded in landholding patterns. The dominance of marginal farmers, who now make up nearly 69% of all agricultural households, skews the average toward low-production, high-vulnerability units. This structural imbalance not only compromises national food security but also

perpetuates a cycle of poverty, agrarian distress, and migration, particularly in regions where smallholder agriculture is the primary livelihood.

Furthermore, the growth in productivity across all classes—from marginal to large—suggests improvements in inputs, technology, and crop varieties over time. However, the benefits of this growth remain unevenly distributed, with marginal farmers unable to take advantage of these advances due to limited land, inadequate irrigation, lack of access to markets, and minimal institutional credit. These constraints result in persistently low returns, prompting migration as a survival strategy, especially among younger and economically active members of farming households.

Changing Employment Metrics in Rural Agricultural Workforce

The most notable trend in Table 4 is the continuous decline in the proportion of Total Main Workers (TMW) relative to the Total Rural Population (TRP). This figure dropped from 35.1% in 1990–91 to 28.2% in 2020–21. This downward trend indicates a decrease in workforce participation in regular or main employment. It suggests a rising dependency ratio or a shift towards informal and irregular forms of employment in rural areas, particularly underemployment and seasonal labour.

Table 4: Agricultural Workforce (Rural) Employment Metrics (%) -INDIA					
S.No	Parameters	1990-91	2000-01	2010-11	2020-21
i.	TMW (R) to TRP	35.1	30.8	29.5	28.2
ii.	TAGW (R) to TRP	28.1	21.8	20.9	19.7
iii.	TAGW(R) to TMW (R)	80.0	70.7	70.7	69.9
iv.	TCULT(R) to TAGW(R)	60.5	62.6	53.4	49.5
v.	TAGLAB (R) to TAGW(R)	39.5	37.4	46.6	50.5
Note TMW(R)-Total Main Workers (Rural), TRP-Total Rural Population, TAGW(R)-Total Agricultural Workers (Rural), TCULT(R)-Total Cultivators (Rural), TAGLAB(R)-Total Agricultural Labourers (Rural)					

There has been a parallel decline in the proportion of Total Agricultural Workers (TAGW) relative to the rural population, decreasing from 28.1% to 19.7% during the same period. This trend indicates a widespread disengagement from agriculture as a primary source of livelihood, likely driven by factors such as land fragmentation, stagnant farm incomes, and the increasing non-viability of small and marginal farming. These changes suggest not only economic stress in rural areas but also a structural transformation in the distribution of the workforce, potentially shifting toward services or informal non-farm sectors.

The ratio of TAGW to Total Main Workers (TMW)—that is, the percentage of main workers engaged in agriculture—has also declined from 80.0% to 69.9%. This reinforces the conclusion that agriculture is no longer the dominant employer in rural economies. This shift marks a significant change in India's rural labour landscape and may help explain the increasing feminisation of agricultural labour, as male workers migrate for non-farm employment opportunities.

Another critical aspect is the internal composition of agricultural workers. The proportion of cultivators (TCULT) among total agricultural workers has decreased from 60.5% to 49.5%, whereas the share of agricultural labourers (TAGLAB) has risen from 39.5% to 50.5%. This inversion serves as a significant indicator of the agrarian crisis. The decline in self-employed cultivators alongside the rise in wage-dependent agricultural labour points to increasing landlessness, the marginalisation of marginal and smallholders, and a loss of control over productive resources. As more farmers either lose their land or find farming unviable, they often transition to working as labourers, frequently under precarious conditions and with lower wages.

This shift from cultivators to labourers is symptomatic of agrarian distress, driven by a combination of declining land productivity, fragmentation of holdings, rising input costs, and limited institutional support. It reflects a loss of autonomy and agency in rural livelihoods, particularly for marginal and small farmers, who are increasingly forced out of independent farming and into dependent, casual labour.

Migration Patterns in Rural Agricultural Workforce

The migration trends among the rural agricultural workforce highlight the structural pressures reflected in Table 5. The percentage of Total Rural Workers (TRW) migrants among Total Workers (TW) migrants dropped from 82.8% in 1990–91 to 72.1% in 2020–21. This decline suggests a gradual shift toward urban migration destinations and may indicate an expansion of migratory aspirations beyond the conventional rural-to-rural movements.

Table 5: Agricultural Workforce (Rural) Migration Dynamics (%) - INDIA

S.No	Parameters	1990-91	2000-01	2010-11	2020-21
i.	TRW (M) to TW (M)	82.8	76.7	77.6	72.1
ii.	TAGW (M) to TRW (M)	63.1	62.1	65.4	67.5
iii.	TCULT (M) to TAGW (M)	49.0	48.8	48.9	49.5
iv.	TAGLAB (M) to TAGW (M)	51.0	51.2	51.1	50.5
Note TRW (M)-Total Rural Workers (Migrants), TW(M)-Total Workers (Migrants), TAGW (M)-Total Agricultural Workers (Migrants), TCULT(M)-Total Cultivators (Migrants), TAGLAB(M)-Total Agricultural Labourers (Migrants)					

The rural migrant workforce has seen a significant presence of Total Agricultural Workers (TAGW), whose share increased from 63.1% to 67.5% between 1990–91 and 2020–21. This trend suggests that agricultural distress is a major factor driving rural outmigration, as agricultural workers increasingly make up the majority of the migrant workforce. The migration of this group is likely influenced by both push factors—such as low incomes, lack of land, and crop failures—and pull factors, like job opportunities in construction, brick kilns, and other informal urban sectors.

The profile of agricultural migrant workers shows a consistent pattern: approximately 49–50% are cultivators, while the remainder are labourers. This relative stability contrasts with the rural resident agricultural workforce, where the proportion of labourers has significantly increased. This indicates that migration is not limited to landless labourers; it also includes small and marginal cultivators who find farming unfeasible and seek additional income through migration.

This duality in migration reflects two interconnected realities: small and marginal farmers often migrate temporarily to supplement household income during the agricultural lean season or in response to crop failures, while landless labourers tend to migrate more permanently or cyclically, driven by chronic employment insecurity.

The consistent share of cultivators among migrant agricultural workers suggests that simply having land does not guarantee livelihood security, especially for marginal farmers. Earlier data indicated that these farmers often cannot even meet their basic foodgrain needs through their production. As a result, they increasingly adopt multi-locational and multi-occupational survival strategies, with migration becoming a crucial component. This shift is characterised by a decline in the status of cultivators and a rise in wage-dependent agricultural labourers, highlighting issues such as land alienation, shrinking landholdings, and the diminishing viability of farming, particularly for marginal households.

Consequently, migration has become a necessary survival mechanism for rural agricultural workers. The stable share of cultivators among migrants underscores that even those who own land are compelled to seek additional income sources, often due to non-remunerative agricultural practices. Thus, migration is not simply a by-product of rural transformation; it is an essential element of rural livelihood strategies in the face of agrarian distress.

Gender Composition and Migration Paradigm of Agricultural Workforces

The gender composition of both the rural agricultural workforce and the migrant agricultural workforce in India has undergone significant changes over the past thirty years (1990-1 to 2020-21). These shifts challenge the long-standing belief that rural migration is predominantly male. Table 6 provides important insights into the evolving gender roles within agriculture and highlights how migration has become an adaptive strategy for rural populations, particularly for women.

Table 6: Gender Composition and Migration Paradigm of Agricultural Workforce (%) - INDIA

S.No	Parameters	Sex	1990-91	2000-01	2010-11	2020-21
i.	Agricultural Workers	T	28.1	21.8	20.9	19.7
		M	72.5	71.4	70.3	69.6
		F	27.5	28.6	29.7	30.4
ii.	Cultivators	T	60.5	62.6	53.4	49.5
		M	79.7	75.4	76.0	76.1
		F	20.3	24.6	24.0	23.9
iii.	Agricultural Labourers	T	39.5	37.4	46.6	50.5
		M	61.4	64.7	63.8	63.3
		F	38.6	35.3	36.2	36.7
iv.	Agricultural Workers (Migrants)	T	63.1	62.1	65.4	67.5
		M	26.9	12.2	12.2	11.1
		F	73.1	87.8	87.8	88.9
v.	Cultivators (Migrants)	T	49.0	48.8	48.9	49.5
		M	31.1	12.8	12.8	11.1
		F	68.9	87.2	87.2	88.9
vi.	Agricultural Labourers (Migrants)	T	51.0	51.2	51.1	50.5
		M	22.8	11.6	11.7	11.1
		F	77.2	88.4	88.3	88.9

In the general agricultural workforce (non-migrant), male dominance remains, although there has been a gradual decrease over time. In 1990–91, men constituted 72.5% of all agricultural workers, while women made up 27.5%. By 2020–21, the male share had decreased to 69.6%, with the female share rising to 30.4%. While this change may seem modest, it indicates a slow but noticeable feminisation of agricultural labour in rural India. This trend is also evident in the division between cultivators and agricultural labourers. Among cultivators, the male share declined from 79.7% in 1990–91 to 76.1% in 2020–21, while the female share increased slightly from 20.3% to 23.9%. In the category of agricultural labourers, female participation fell from 38.6% to 36.7% during the same period, indicating a slight dip in between. This suggests women's increasing reliance on wage-based agricultural work as household farming becomes less viable.

The most striking transformation, however, is observed in the migrant agricultural workforce. Contrary to conventional narratives that associate rural migration primarily with men seeking employment outside agriculture or in urban centres, data shows that agricultural migration has become predominantly driven by women. In 1990–91, 73.1% of all agricultural migrant workers were female, and this figure surged to 88.9% by 2020–21. Meanwhile, the share of male migrants in agriculture dropped steeply from 26.9% to just 11.1%.

This trend is also apparent in the subcategories of cultivators and agricultural labourers among migrants. In 1990–91, female cultivators comprised 68.9% of migrant cultivators, a figure that steadily increased to 88.9% in 2020–21. Male migrant cultivators fell from 31.1% to 11.1%. Similarly, among agricultural labourers, female representation rose from 77.2% to 88.9%, while male participation dropped from 22.8% to 11.1%. This inversion of the traditional migration narrative suggests that women are increasingly engaging in seasonal and long-term agricultural migration, likely due to economic distress, land fragmentation, and the declining viability of subsistence farming.

The implications of this gendered shift in migration are profound. Firstly, it indicates a growing burden on women as economic providers in rural India. As small and marginal farms become less sustainable due to land fragmentation and low productivity, women are compelled to seek alternative livelihoods, often through migration to work as agricultural labourers in other regions. Secondly, it signifies the weakening of the male-centric model of household migration, where men migrate while women stay behind. In many parts of rural India, especially in states with higher out-migration rates, women are becoming the mobile labour force while also managing household and farm responsibilities.

Furthermore, the rise in female agricultural migration signals changes in the social fabric of rural communities. This shift may be associated with distress-induced mobility, limited access to non-farm employment, and the feminisation of poverty. Unlike male migrants who frequently move to urban centers for various jobs, female agricultural migrants are more likely to migrate within rural areas, often as part of group migration or through labour contractors, to work in plantations, weeding, harvesting, or transplanting operations—jobs that are traditionally undervalued and underpaid, and often found in informal sectors such as MSME enterprises, housekeeping, and construction in urban areas.

The data also highlights a key structural challenge: the need for gender-responsive rural development policies. With women making up an increasing share of both resident and migrant agricultural workers, it is crucial to ensure their access to dignified job rights, skill development, credit facilities, social security, and legal protections, particularly in informal employment settings. Moreover, as women's migration increases, so does their vulnerability to exploitation and gender-based discrimination in labour markets.

In conclusion, the trends presented dismantle the myth that migration is predominantly a male phenomenon. On the contrary, they reveal that in the agricultural sector, migration is now largely a female-led coping mechanism in response to rural economic distress. Women are not only managing fragmented farms but are also stepping into roles as migrant labourers in ever-increasing numbers, marking a significant transformation in the gender dynamics of India's rural economy.

CONCLUSION

The findings of this research provide a comprehensive understanding of the evolving crisis in Indian agriculture, particularly regarding land fragmentation, restructuring of the rural workforce, and gendered patterns of migration. Over the last three decades, there has been a significant shift in the structure of landholdings, with marginal and small farms increasingly dominating the agrarian landscape. Although these categories of farmers now represent the majority of operational holdings and make substantial contributions to national food grain production, their shrinking average land sizes have made agriculture progressively less viable, especially for those at the lower end of the landholding spectrum. This situation not only limits productivity and investment but also intensifies rural economic distress.

A noteworthy outcome of these structural shifts has been the rising incidence of rural out-migration, traditionally viewed as a male-dominated phenomenon. However, the data indicates a significant feminisation of migration within the agricultural sector. Women now constitute a disproportionately large share of migrant agricultural workers, cultivators, and labourers. This transformation challenges prevailing assumptions and calls for a re-examination of rural development policies, which often overlook the critical role of women in sustaining agricultural production and household livelihoods amid declining returns from land.

Furthermore, the agricultural workforce has experienced a visible shift from cultivation-based to wage-based labour, with a decreasing proportion of cultivators and an increasing share of agricultural labourers. This shift has been accompanied by a decline in the overall proportion of agricultural workers within the rural workforce, indicating a deepening agrarian crisis and a search for alternative sources of livelihood.

These transformations underscore the urgency of reimagining India's rural development strategy. There is a critical need to address land fragmentation through innovative land use policies, promote aggregation and cooperative farming models, and ensure equitable access to land, credit, technology, and institutional support. Equally important is the imperative to integrate gender considerations into agricultural and migration policy discussions, recognising women not just as residual labourers but as primary agents of agricultural production and rural transformation.

In conclusion, the rural agrarian economy of India stands at a crossroads. If the trends of marginalisation, fragmentation, and gendered migration are left unaddressed, they will further erode the socio-economic resilience of rural households. However, with targeted interventions, inclusive policies, and a shift in developmental priorities, it is possible to turn these challenges into opportunities for a more equitable, productive, and sustainable rural future.

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