

Food Security and Demographic Transition in Nepal: The Impact of Youth Migration

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Abstract— Global population dynamics are changing rapidly. While some countries continue to experience rapid population growth, others are facing stagnation or even population decline. Nepal is also undergoing a significant demographic transformation, shaped by declining fertility, increasing life expectancy, and large-scale youth migration. Although Nepal currently hosts a sizeable youth population, persistent out-migration is accelerating the transition toward an aging society. These shifts are reshaping the country's socio-economic and food systems in profound ways.

This article examines the relationships among youth migration, the demographic transition, and food security in Nepal. Drawing on secondary data, academic literature, policy documents, and empirical studies, it argues that youth migration produces mixed outcomes. On one hand, remittances enhance household income and food access for many families. On the other hand, the departure of young workers creates labor shortages in agriculture, alters rural food systems, and deepens inequalities among households and regions. The article concludes by highlighting policy options that better align migration dynamics with Nepal's long-term food security goals.

Keywords— Youth Migration, Demographic Transition, Food Security, Remittances, Agricultural Labor Shortage, Rural Transformation, Urban Food Systems, Gender and Household Dynamics, Demographic Dividend, Sustainable Development

I. INTRODUCTION

Food security and the demographic transition are increasingly shaped by large-scale youth migration worldwide. In many low- and middle-income countries, declining fertility

rates, aging rural populations, and expanding labor mobility have fundamentally altered food systems. Young people, who traditionally formed the backbone of agricultural production, are leaving rural areas in search of education, employment, and improved livelihoods. This global trend has reduced the availability of agricultural labor, increased reliance on mechanization and food imports, and shifted food consumption patterns toward purchased and processed foods. At the same time, remittances from migration have improved household purchasing power, helping many families secure sufficient food despite declining local production.

Globally, youth migration has created a paradox for food security. On one hand, remittances contribute significantly to food access, dietary diversity, and resilience against short-term shocks, especially in fragile and climate-vulnerable regions. On the other hand, sustained outmigration undermines food availability and stability by weakening domestic food production systems and accelerating rural depopulation. Countries in South Asia, Sub-Saharan Africa, and parts of Latin America are witnessing abandoned farmland, feminization of agriculture, and growing dependence on global food markets. These dynamics make national food systems more vulnerable to external shocks such as global price volatility, climate change, pandemics, and geopolitical disruptions (Bhandari, 2024a, b, c).

Nepal reflects these global dynamics in an intensified form. The country is undergoing a rapid demographic transition marked by declining fertility, increasing life expectancy, and a massive outflow of youth to foreign labor markets. Migration



has become a defining feature of Nepal's development pathway, with remittances playing a central role in household economies and national GDP. While remittance income has significantly improved food access for many households, it has also contributed to declining agricultural labor, reduced productivity, and widespread land abandonment, particularly in hill and mountain regions. As a result, Nepal has become increasingly dependent on food imports, despite its agrarian foundations.

The demographic impacts of youth migration in Nepal are particularly evident in rural areas, where aging populations and the growing burden on women and elderly household members have reshaped agricultural practices and food utilization. Women have assumed greater responsibility for farming and household food management, often without adequate access to land rights, credit, technology, or institutional support. This gendered dimension of demographic transition has implications not only for food production but also for nutrition outcomes, as caregiving, dietary choices, and labor demands intersect.

Nepal's food security challenges are further compounded by climate change, environmental degradation, and limited agricultural modernization, as youth exit agriculture and rural communities, innovation, knowledge transfer, and long-term investment in farming decline. Although remittances offer short-term relief, they rarely translate into productive agricultural investment or rural enterprise development. This mirrors global patterns where migration alleviates immediate poverty but fails to address structural vulnerabilities in food systems unless supported by coherent policy frameworks.

In this context, Nepal's experience highlights a broader global lesson: demographic transition and youth migration must be integrated into food security planning. Without strategic interventions to retain and attract youth to agriculture, strengthen rural livelihoods, and channel remittances into sustainable food systems, migration-driven development risks deepening long-term food insecurity. Nepal's future food security will depend on its ability to align demographic change, migration governance, and agricultural transformation within a rapidly changing global landscape.

1) Background

Nepal's development trajectory is closely linked to its geography, socio-economic conditions, and demographic trends. (GON, NPC 2020). Traditionally, the country has been an agrarian society, with subsistence farming forming the backbone of rural livelihoods and food production. Even today, agriculture remains a major contributor to national GDP and employs a large share of the population (FAO, 2025). However, its role is gradually changing due to structural economic shifts, urbanization, and especially migration.

Over the past few decades, Nepal has experienced notable demographic change (Bhandari, 2021). A large "youth bulge" initially emerged as fertility rates remained high while mortality declined. More recently, this youth-dominated population structure has been reshaped by extensive internal and international migration. As young people leave rural areas and the country in search of employment and better opportunities, population structures in both rural and urban settings are being

transformed.

In recent years, widespread internal and international migration has reshaped Nepal's population landscape (Rawat, 2024). Many young people are leaving their villages and the country itself in search of jobs, education, and better life opportunities. As a result, rural communities are increasingly characterized by labor shortages and an aging population, while cities are experiencing growing population pressure and rising demand for services and employment. (UNFPA 2024) These shifts in population and mobility are gradually redefining Nepal's development trajectory, with significant consequences for agriculture, food security, and the country's long-term socio-economic sustainability

2) Research Aim and Scope

This article explores how youth migration interacts with Nepal's demographic transition and influences food security outcomes. Specifically, it examines:

- Nepal's demographic transition and its implications for labor availability and agricultural productivity

Nepal is undergoing a significant demographic transition characterized by declining fertility rates, rising life expectancy, and an increasing proportion of the working-age population. While this transition presents opportunities for economic growth, it also poses challenges for traditional agrarian systems, particularly in rural areas. Agriculture in Nepal remains largely labor-intensive and dependent on family labor, yet demographic shifts—combined with large-scale youth outmigration—are reducing the availability of non-disabled workers in farming households. As younger generations increasingly seek education and employment outside agriculture, the rural labor force is aging and feminizing, with women and elderly family members assuming greater responsibility for agricultural production.

This changing demographic structure affects agricultural productivity in multiple ways. Labor shortages can lead to delayed planting and harvesting, reduced crop diversity, and abandonment of marginal land, ultimately lowering overall production. At the same time, the physical demands of farming place disproportionate burdens on older farmers and women, often without commensurate access to technology, credit, or extension services. While demographic transition theoretically enables a shift toward mechanization and productivity gains, such transitions are uneven in Nepal due to limited infrastructure, fragmented landholdings, and unequal access to capital.

Understanding the intersection of demographic change and agriculture is therefore essential for assessing food security. The demographic transition does not automatically translate into improved productivity; instead, its outcomes depend on how labor shortages are managed, whether remittances are invested productively, and how agricultural policies adapt to changing rural realities.

- Patterns and drivers of youth migration

Youth migration in Nepal has become a defining socio-economic phenomenon, driven by a combination of structural, economic, and environmental factors. Limited employment opportunities, low agricultural returns, land fragmentation, and

inadequate rural services push young people to seek livelihoods elsewhere, while perceived opportunities for higher income and social mobility pull them toward urban centers and foreign labor markets. Migration is increasingly normalized as a household strategy for income diversification and risk management, particularly amid climate variability and economic uncertainty.

Patterns of migration vary by gender, region, and socio-economic status. Young men dominate international labor migration, especially to the Gulf countries, Malaysia, and India. In contrast, women's migration is shaped by restrictive policies, care responsibilities, and social norms, though female migration is gradually increasing. Internal migration to urban areas is also rising, contributing to rural depopulation and urban informality. Education plays a complex role: while higher education can enable skilled migration, many youths with limited schooling also migrate into low-wage, precarious employment abroad.

Environmental stressors such as declining soil fertility, erratic rainfall, and natural disasters further intensify migration pressures by undermining agricultural livelihoods. For many rural households, youth migration is not merely an individual choice but a collective survival strategy. Analyzing these patterns and drivers helps situate migration within broader processes of demographic change, rural transformation, and structural inequality, all of which have direct implications for food security and agricultural sustainability.

- Effects of youth migration on food availability, access, utilization, and stability

Youth migration reshapes all four pillars of food security—availability, access, utilization, and stability—in complex and often contradictory ways. On the one hand, the departure of young laborers can reduce local food availability by constraining agricultural production, particularly in subsistence-oriented farming systems. Labor shortages may lead to reduced cropping intensity, shifts toward less labor-demanding crops, or increased reliance on food imports, weakening local food systems.

On the other hand, remittances sent by migrant youth can improve household food access by increasing purchasing power. Many households use remittance income to buy diverse and nutritious foods, smooth consumption during lean periods, and cope with shocks such as crop failure or illness. Improved access to cash can also enhance food utilization by enabling better healthcare, sanitation, and education, all of which influence nutritional outcomes.

However, reliance on remittances can also introduce new vulnerabilities. Households may become dependent on volatile external income sources, making food security sensitive to global labor market fluctuations or migration disruptions. Additionally, changes in food consumption patterns toward processed and imported foods can have long-term nutritional implications. The balance between reduced local production and increased market dependence thus shapes food stability. Understanding these dynamics is crucial for assessing whether migration strengthens or undermines food security over time, particularly in contexts sensitive to climate and markets.

- Unequal impacts of migration and remittances across

households and demographic groups

The impacts of youth migration and remittances on food security are unevenly distributed across households and demographic groups. Wealthier households with access to land, education, and social networks are better positioned to finance migration and secure higher-paying jobs abroad, resulting in more stable remittance flows. These households often experience improved food security, dietary diversity, and resilience to shocks. In contrast, poorer households may face high migration costs, debt burdens, and precarious employment outcomes, limiting the benefits of migration and, in some cases, exacerbating food insecurity.

Gender and age further shape these inequalities. Women left behind often assume expanded agricultural and caregiving responsibilities but may lack decision-making power over remittance use or access to productive resources. Elderly household members may struggle to manage farms and ensure adequate nutrition, particularly in labor-scarce contexts. Caste, ethnicity, and geographic location also influence migration opportunities and outcomes, reinforcing existing structural inequalities.

Moreover, not all households consistently receive remittances, and delays or disruptions can destabilize food access and consumption. These disparities highlight that migration is not a universal solution to food insecurity. Instead, its benefits and risks are mediated by social position, household structure, and access to institutional support. A nuanced understanding of these unequal effects is essential for designing inclusive policies that address the vulnerabilities of those who are least able to benefit from migration-driven livelihood strategies.

- Policy responses to enhance positive outcomes and reduce associated risks

Effective policy responses are needed to maximize the positive contributions of youth migration to food security while mitigating its risks. First, agricultural policies must address rural labor shortages through appropriate mechanization, skill development, and support for women and elderly farmers. Investing in climate-resilient agriculture, extension services, and local value chains can help sustain food production despite demographic change.

Second, migration governance should prioritize protecting migrant workers by reducing recruitment costs, ensuring labor rights, and promoting safe and legal migration pathways. Stable, secure migration enhances the reliability of remittance flows, which are critical to household food access. Financial literacy programs can further support productive investment of remittances in agriculture, nutrition, and local enterprises.

Third, social protection systems—including food assistance, cash transfers, and insurance schemes—should target households left vulnerable by migration, particularly those without remittance income. Integrating migration-sensitive approaches into food security and rural development policies can reduce dependence on external labor markets.

Finally, policies must create viable local opportunities for youth by improving education, rural employment, and agri-entrepreneurship. By addressing the structural drivers of

migration while strengthening food systems, Nepal can transform youth mobility from a coping strategy into a pathway for inclusive and sustainable food security.

II. CONCEPTUAL FRAMEWORK

This study is grounded in a conceptual framework that links demographic transition, youth migration, and food security as interconnected and dynamic processes. Demographic transition—characterized by declining fertility rates, changing age structures, and increased life expectancy reshapes labor availability, household composition, and consumption patterns. In countries experiencing rapid demographic change, young people represent a critical productive force. When large numbers of youth migrate, particularly from rural areas, the demographic transition directly influences agricultural systems and food security outcomes.

Youth migration acts as a central mediating variable in this framework. Migration reduces the availability of agricultural labor, accelerates rural aging, and alters traditional farming practices. These changes affect food availability by lowering domestic production and increasing dependence on food imports. At the same time, migration generates remittances that enhance household income and purchasing power, thereby improving food access and, in many cases, dietary diversity. This creates a dual effect in which migration simultaneously strengthens and weakens different dimensions of food security.

Food security is analyzed through four interrelated dimensions: availability, access, utilization, and stability. Labor shortages and land abandonment primarily affect food availability and long-term stability, while remittances influence access and utilization through improved income, healthcare, and nutrition choices. Household-level outcomes are shaped by gender roles, as women and elderly family members increasingly manage agriculture and food systems in the absence of migrant youth.

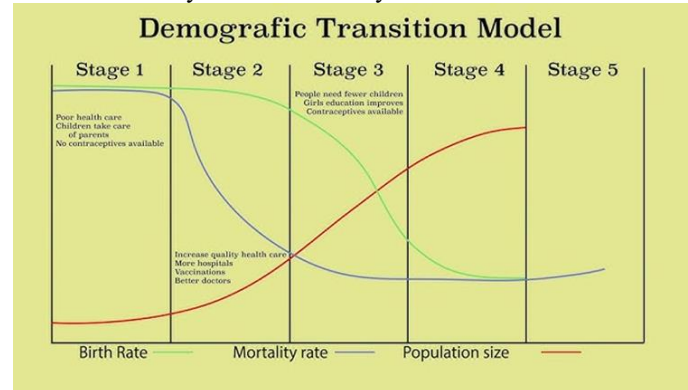
External factors such as climate change, market integration, and policy environments interact with demographic and migration dynamics, amplifying both risks and opportunities. The framework, therefore, emphasizes feedback loops: declining agricultural viability encourages further migration, while effective rural investment and inclusive policies can reduce distress-driven migration. Overall, the framework illustrates how aligning demographic transition, migration management, and food system transformation is essential for achieving sustainable food security.

1) Demographic Transition

The demographic transition model explains the shift from high fertility and mortality rates to lower levels, leading to changes in population age structure and dependency ratios (IMF, 2015). In Nepal, declining birth and death rates, along with rising life expectancy, have increased the proportion of the working-age population. However, continued fertility decline is now contributing to gradual population aging.

The demographic transition model helps us understand how populations change over time. It explains the shift from high

birth and death rates to lower ones, usually as countries develop economically, improve healthcare, and undergo social changes (IMF, 2015). The model is divided into several stages, each showing different patterns of population growth, age structure, and the ratio of dependents to working-age people. Looking at these changes helps us understand long-term trends and their effects on society and the economy.



Source: Demographic transition model Class 12 Geography NCERT

In the early stages of the demographic transition, both birth and death rates are high. Life expectancy is low, and families tend to have many children to replace those who die young. As a result, most of the population is young, and the youth dependency ratio, the number of children compared to working-age adults, is very high. As societies develop, improvements in healthcare, sanitation, and nutrition reduce mortality, especially among infants and children. Birth rates, however, usually remain high at first, leading to rapid population growth, sometimes called a "population explosion."

A gradual decline in birth rates marks the next stage. Fertility tends to decrease after mortality because social and cultural changes take time. As families have fewer children, the share of young people in the population drops, while the working-age population (15–64 years) grows. This shift creates a demographic dividend, with more people working than dependents. If a country provides good education, healthcare, and jobs, this can boost economic growth.

Nepal is a good example of a country experiencing these changes. In recent decades, improvements in healthcare and child health programs have sharply reduced infant and overall mortality rates. At the same time, factors like urbanization, increased education for women, and government policies have contributed to declining fertility rates. According to the IMF (2015), these changes have increased the share of working-age people in Nepal's population, offering the potential to strengthen the workforce and national development.

However, demographic transition is not just about growth. It also brings new challenges. As fertility continues to fall in Nepal, the population is gradually aging (CBS, 2023). This means there are more older adults relative to working-age people, raising the old-age dependency ratio. Fewer workers supporting more older adults creates pressure on pensions, healthcare, and social services. Planning for this shift is essential, including policies on retirement, healthcare infrastructure, and workforce management (Paudel, 2025).

The changing age structure also affects education and skills

development. With fewer children being born, Nepal has the opportunity to invest more in each child's education (UNICEF 2018). At the same time, the growing working-age population needs jobs and training to fully benefit from the demographic dividend (UNDESA, 2025). If these opportunities are missed, it could lead to unemployment and social problems. Well-targeted investments in education, skills, and healthcare can help Nepal take advantage of this window of opportunity and build a stronger economy.

Demographic changes also influence urbanization and migration. As fertility declines and life expectancy rises, more working-age people move to cities for education and jobs (Huang & Chen, 2025). In Nepal, rural-to-urban migration is increasing, creating challenges for urban planning, housing, and public services. Effective policies are needed to manage these trends and ensure balanced regional development (Adams, 2021).

In conclusion, the demographic transition model shows how populations shift from high birth and death rates to lower ones, changing age structures and dependency ratios (IMF, 2015). Nepal's experience illustrates this process: declining fertility and mortality, rising life expectancy, a larger working-age population, and gradual population aging. These changes bring both opportunities and challenges (World Bank 2025). With smart investments in education, healthcare, and employment, Nepal can make the most of its demographic dividend and prepare for an aging society, supporting sustainable development and a better quality of life for all citizens (Sharma & Shakya 21025).

This transitional phase can offer a "demographic dividend," in which a large, productive labor force drives economic growth. However, in Nepal's case, extensive youth migration complicates this opportunity, as many working-age individuals are not contributing directly to the domestic economy.

2) Food Security

Food security, as defined by the Food and Agriculture Organization (FAO), rests on four interrelated pillars: availability, access, utilization, and stability. Food security is about more than just having enough food to eat. It means that everyone, at all times, can access safe, nutritious, and sufficient food to lead a healthy and active life (FAO, 2020). Achieving this in Nepal is not simple. The country's unique geography, economy, and social conditions all influence whether people can consistently access the food they need (MOH, 2022).

Nepal's landscape is diverse, ranging from high mountains to fertile plains. This variety brings both advantages and challenges for growing food. In mountainous and remote areas, farming is difficult, and transporting crops to markets is expensive (Shrestha et al., 2025). Many rural households depend on subsistence farming, producing just enough food for their families. This limits the variety of foods they can eat. Agriculture forms the backbone of Nepal's economy, but productivity is low due to small farm sizes, traditional methods, and unpredictable impacts of climate change (NYCA, 2026). As a result, Nepal still imports some staple foods, leaving the country vulnerable to price fluctuations and global supply constraints.

Nutrition is another important part of food security. Malnutrition among children is a continuing concern. Nearly one in three children under five is stunted, and about 12% are underweight (NDHS, 2022). Many people, especially in rural areas, also suffer from deficiencies in essential vitamins and minerals, such as iron and vitamin A. Climate change exacerbates these problems. Melting glaciers, erratic rainfall, and occasional floods affect crops and livestock, creating uncertainty about food availability.

Population changes and migration also affect food security (UN, 2019). Many young people leave rural areas for cities or go abroad to study or find work. While this can create new opportunities for families, it reduces the number of people available to work on farms, making local food production more difficult. At the same time, population growth and urbanization increase food demand in cities. This underscores the importance of robust systems for efficiently distributing food so everyone can access it.

The Nepalese government has taken steps to address these challenges. The National Agriculture Development Strategy (2015–2035) aims to increase productivity through improved irrigation, better seeds, livestock programs, and food storage facilities. Nutrition-focused programs target malnutrition, especially among children and women, to help ensure healthier generations.

Even with these efforts, challenges remain. Nepal's geography, climate risks, and shrinking rural workforce make it difficult for everyone to get enough food (Kathmandu Post, 2024). Rising urban populations put pressure on food distribution systems. However, there are opportunities as well. Expanding irrigation, introducing modern farming technologies, and involving youth in agriculture through training programs can improve productivity and make food systems more resilient.

Availability refers to sufficient food supplies, whether from domestic production or imports.

Food security is commonly understood through four interrelated pillars: availability, access, utilization, and stability. Availability refers to the presence of adequate food supplies at national, regional, and household levels, obtained through domestic agricultural production, food stocks, imports, and food aid. In agrarian countries like Nepal, food availability is closely linked to agricultural productivity, labor availability, land use, and climatic conditions, making it particularly sensitive to demographic change and youth outmigration.

Access concerns households' economic and physical ability to obtain food.

Access concerns individuals' and households' ability to obtain sufficient food, both economically and physically. Even where food is available in markets, households may lack access due to low income, unemployment, high food prices, poor infrastructure, or social exclusion. Remittances from migrant family members can improve access by increasing purchasing power, but reliance on cash income may also expose households to market volatility and external shocks.

Utilization relates to nutritional quality, food safety, and health conditions.

Utilization refers to how food is consumed and metabolized, emphasizing nutritional quality, food safety, dietary diversity, and health conditions such as sanitation, clean water, and access to healthcare. Adequate utilization requires not only sufficient calories but also balanced nutrients and knowledge of appropriate food preparation and feeding practices, particularly for children, women, and the elderly.

Stability involves the reliability of food access over time.

Stability refers to the consistency and reliability of food availability and access over time. Households may be food secure at certain periods but vulnerable during lean seasons, climate shocks, economic crises, or disruptions to remittance flows. Ensuring stability requires resilient food systems, diversified livelihoods, and social protection mechanisms that buffer households against recurring and unexpected risks.

Youth migration intersects with all four pillars by reshaping agricultural labor, household income, dietary practices, and resilience to shocks. (Timsina, 2024).

3) Youth Migration

Migration has long been a livelihood strategy in Nepal. Youth migration, both internal and international, is driven by limited domestic employment opportunities, aspirations for education and skills development, and demand in global labor markets (Maharjan, 2018). While remittances contribute substantially to household income and national GDP, migration also reduces the agricultural workforce and contributes to rural depopulation.

III. NEPAL'S DEMOGRAPHIC TRANSITION AND YOUTH MIGRATION PATTERNS

1) Changing Population Structure

Nepal's population structure has evolved from one characterized by high fertility and mortality to one marked by lower fertility and mortality rates (AIN, 2025). This has increased the share of the working-age population, although the country is now gradually moving toward an aging demographic profile.

The youth bulge presents a potential opportunity for economic growth. However, persistent unemployment and underemployment have led many young Nepalis to seek livelihoods elsewhere, limiting the domestic benefits of this demographic advantage (Bajcharya, 2022)

2) Drivers of Youth Migration

Several interconnected factors influence youth migration in Nepal:

- Limited access to quality employment in agriculture and the formal sectors;
- Significantly higher wages abroad;
- Aspirations for education, skills, and social mobility;
- Established social networks that facilitate migration.
- Political insecurity
- Famine company and loan

Recent estimates suggest that over 2.5 million Nepalis are working abroad, with remittances accounting for nearly 28.6 percent of GDP in recent fiscal years (Chehetri et al., 2024).

3) Internal and International Migration

Youth migration occurs both internally, toward urban centers such as Kathmandu and Pokhara, and internationally, primarily to Gulf countries, Malaysia, and selected Western nations. (Bhusal, 2025). Internal migration reshapes urban food demand and rural labor availability, while international migration strongly influences remittance flows and rural household economies.

IV. YOUTH MIGRATION AND FOOD SECURITY: PATHWAYS OF INFLUENCE

Youth migration has emerged as a defining socio-economic phenomenon shaping food security systems across the Global South and beyond. Driven by limited livelihood opportunities, environmental stress, climate change, and aspirations for education and decent work, young people increasingly move from rural to urban areas or across national borders. This movement profoundly influences food production, access, utilization, and stability—key pillars of food security.

One primary pathway of influence is labor transformation in agriculture. Rural youth migration often leads to labor shortages, aging farming populations, and declining productivity, particularly in smallholder and subsistence farming systems. As young people leave agriculture, traditional knowledge systems, intergenerational learning, and local food practices weaken, undermining long-term resilience. However, migration can also stimulate agricultural innovation when remittances are invested in mechanization, improved seeds, irrigation, or climate-resilient practices.

A second pathway is economic remittances and household food access. Migrant youth frequently support rural households through financial transfers, thereby enhancing food purchasing power, dietary diversity, and access to health and education. In food-insecure regions, remittances often act as informal safety nets, buffering households against climate shocks, market volatility, and seasonal hunger. However, reliance on remittances may also reduce local food production incentives if agriculture is no longer perceived as viable or dignified work.

The third pathway lies in social and cultural change. Migration reshapes food preferences, consumption patterns, and aspirations. Exposure to urban and global food systems can increase demand for processed and imported foods, sometimes at the expense of nutritious, locally produced diets. At the same time, returning or connected youth may introduce new ideas, technologies, and entrepreneurial models that strengthen local food systems.

Ultimately, youth migration is neither inherently harmful nor beneficial to food security. Its impacts depend on governance, investment in rural transformation, inclusive education, and policies that make sustainable agriculture a dignified, innovative, and viable pathway for young people. Aligning youth aspirations with resilient food systems is therefore central to achieving long-term food security and social equity.

1) Agricultural Labor Shortages

One of the most immediate consequences of youth migration

is a decline in the availability of agricultural labor (Pant, 2013). Young adults who traditionally played key roles in farming are often absent, leading to reduced productivity, delayed farming activities, and greater dependence on older family members or mechanization. Several studies highlight how labor shortages linked to migration can negatively affect food availability in rural Nepal (Acharya et al., 2025).

2) Changing Perceptions of Agriculture and Land Use

Migration also reshapes how agriculture is perceived. Many young people increasingly view farming as unattractive or unviable, influencing decisions to abandon or lease farmland (Paudel et al., 2024). As a result, land may remain fallow, potentially undermining long-term food production capacity.

3) Remittances and Food Access

Despite these challenges, remittances play a crucial role in improving household access to food. Increased income allows families to purchase food, invest in agricultural inputs, and improve health and education outcomes (Regmi & Paudel, 2023). Empirical studies indicate that migrant households often achieve more diverse diets, particularly for children, highlighting the positive role of remittance income.

4) Household Dynamics and Food Utilization

Migration alters household roles and responsibilities. Women often take on greater decision-making authority over agriculture and food provisioning (Mallick et al., 2010). This shift can improve food utilization and nutrition outcomes, though it may also increase workloads and social pressures for those left behind.

Youth migration has become a standard part of everyday life in Nepal and a key feature of the country's demographic transition, as many young people, especially men, leave their villages to seek work within Nepal or abroad. Family life at home changes in important ways. Food production, preparation, and daily household responsibilities increasingly fall on those who stay behind, particularly women, children, and older family members. These shifts strongly influence how households use food and, ultimately, affect nutrition and food security.

Migration often changes long-standing gender roles within families. When men are absent, women take on greater responsibility for farming, managing household food supplies, and making day-to-day decisions. Along with these responsibilities, women often gain greater control over decisions about food choices, agricultural practices, and household spending. Research by Mallick et al. (2010) highlights that this increased decision-making power can lead to better food utilization, as women tend to prioritize nutritious diets, proper child feeding, and household well-being. In many migrant households, remittances managed by women are used to buy healthier food, access health services, and support children's education, contributing to improved nutrition outcomes.

Greater control over household resources can positively influence how food is used. Women's decisions often support more balanced diets, better food hygiene, and careful use of income for essential needs rather than non-essential consumption (Malapit et al., 2015). Evidence from Nepal and

other South Asian countries shows a strong link between women's empowerment and improved child nutrition and food security outcomes. This suggests that, despite the disruptions caused by migration, food utilization can improve when women are supported and empowered within the household.

At the same time, these benefits come with significant challenges. Women left behind often face a heavy workload as they juggle farming, household chores, childcare, and community obligations (Engle et al., 2017). This added responsibility, sometimes described as a "double burden," can lead to fatigue, stress, and limited time for rest and self-care. Such pressures may reduce the positive effects of increased decision-making power on nutrition and health. Limited access to labor, agricultural support services, and modern farming technologies further makes it difficult for women to manage food production effectively.

In rural Nepal, where agriculture remains largely labor-intensive, the shortage of young workers can reduce farm productivity and strain household food availability. Women and elderly family members may struggle to maintain previous levels of food production, increasing dependence on markets and remittance income (Singh & Sharma, 2019). When remittances are irregular or insufficient, households may struggle to maintain food quality and dietary diversity.

In conclusion, youth migration in Nepal reshapes household roles and responsibilities, thereby directly affecting food utilization. While increased decision-making power among women can lead to better nutrition and food practices, the added workload and social pressures faced by those left behind cannot be ignored (Alam, 2025). To ensure that migration contributes positively to food security, policies must support women through access to labor-saving technologies, agricultural extension services, nutrition education, and social protection programs. Such measures are essential for turning demographic change into lasting improvements in household food security and well-being.

V. DIFFERENTIAL EFFECTS ACROSS FOOD SECURITY DIMENSIONS

1) Food Availability

While reduced labor availability can lower agricultural output, remittances may partially offset this effect by enabling investment in mechanization, improved seeds, and fertilizers. However, the relationship between migration, remittances, and food availability is complex. Migration reduces labor availability, potentially lowering agricultural output and threatening food security. At the same time, remittances provide a critical financial lifeline that can support mechanization, improved inputs, and technological adoption, partially compensating for labor losses (FAO, 2025). The net effect depends on how these funds are utilized and the specific agricultural and socio-economic context. When strategically invested, remittances have the potential to transform rural agriculture, maintaining food availability even in the face of labor shortages

2) Food Access

Migrant households generally enjoy better food access due to increased purchasing power. However, households without migration links may experience declining access and widening socio-economic inequalities. Households with family members who migrate often have better access to food because remittances provide an extra source of income. This additional money allows them to buy a wider variety of foods, improve the quality of their meals, and maintain a more reliable diet, even when prices rise or supplies are limited. On the other hand, families without migrants may struggle to meet their basic food needs (FAO, 2025). With limited income and no remittance support, they often cannot afford the same diversity or quality in their diets, leaving them more vulnerable to food insecurity. Over time, this difference can deepen economic and social inequalities, as households connected to migration enjoy better nutrition and well-being, while those without such links face greater hardship. In this way, migration not only changes the lives of individual families but also shapes broader patterns of food access and inequality in communities

3) Food Utilization

Improved income often supports better diets and healthcare. At the same time, reliance on purchased food increases vulnerability to price fluctuations and market disruptions. Food utilization, a core dimension of food security, refers to how effectively individuals consume and metabolize nutrients, which is influenced by diet quality, food safety, access to clean water, sanitation, and healthcare services (i.e., the non-food determinants of nutritional well-being). When households receive additional income, such as through remittances, they often have greater capacity to afford more nutritious and diverse foods and to access essential health services, which can improve nutritional outcomes (reflecting findings that remittances can enhance food security by increasing food consumption and reducing coping strategy stress, Campos, 2023). However, increased reliance on market-purchased foods introduces vulnerability to food price volatility, seasonal scarcity, and supply disruptions, which can undermine diet quality if households are forced to substitute less nutritious, cheaper foods during economic shocks. Consequently, while higher income can support better food utilization and nutrition, it also exposes households to new risks that must be addressed to sustain long-term food security

4) Food Stability

Migration can enhance stability through income diversification but may also introduce new risks if remittances decline during economic crises or global shocks. Food stability, defined as consistent access to adequate, safe, and nutritious food over time, can be significantly influenced by migration through the diversification of household income sources. Migration often leads to remittance inflows that act as a financial buffer, enabling households to maintain food consumption during periods of local production shortfalls, seasonal scarcity, or unexpected income losses (e.g., remittances have been shown to enhance food security and household welfare in multiple developing contexts). However, this reliance on remittance income also exposes households to

new risks: if remittances decline due to economic downturns, global crises, or job losses in destination countries, households may suddenly lose a key source of food purchasing power, potentially undermining their food security and forcing reductions in dietary quality or consumption levels. Thus, while remittance-driven income diversification can strengthen food stability, it simultaneously creates vulnerability to external economic shocks that must be considered in long-term food security planning

VI. COMMUNITY-LEVEL FOOD SECURITY IMPACTS

1) Rural Communities

Rural areas experience pronounced effects of youth out-migration, including aging populations, higher dependency ratios, and weakened agricultural resilience (Jayaweera & Verma, 2024). Rural communities feel the effects of youth migration more strongly than other areas. Many young men and women leave their villages to seek jobs in cities or abroad, leaving behind an older population. With fewer young people around to handle physically demanding tasks, households face higher dependency ratios—the number of children and elderly relying on a smaller group of working-age adults. This shift places added economic and social pressure on the families that remain.

The absence of youth also impacts farming and food production. Young people often perform much of the labor on farms, care for livestock, and are more likely to adopt new farming methods. When they leave, agricultural productivity can decline, the variety of crops grown may decrease, and the adoption of innovations that make farming more efficient slows down. Consequently, rural households often become more dependent on remittances, local markets, or government support to meet their basic food needs. During droughts, floods, or economic challenges, this labor shortage can make communities even more vulnerable (Bhandari, 2024a,b,c).

In short, youth out-migration reshapes rural life in profound ways. It changes the age structure of communities, reduces the labor available for farms, and challenges the long-term resilience of agriculture. These changes highlight how demographic shifts and migration are deeply connected to household livelihoods, food security, and the future of rural communities

2) Urban Pressures

Internal migration increases food demand in urban areas, placing pressure on supply chains and infrastructure, particularly for low-income households. As people leave their rural villages to seek work and better opportunities in cities, urban populations grow rapidly. This sudden increase in city residents drives up food demand, often faster than supply systems can keep pace (FAO, 1998). Markets and distribution networks must source more food from nearby rural areas or even distant regions, putting pressure on transport systems, storage facilities, and retail outlets. In many developing countries, these urban food supply chains are already stretched thin, with limited capacity, inadequate refrigeration, and poor

transportation links, making it challenging to meet rising demand without delays or higher costs.

For low-income households, these pressures hit hardest. Many new migrants work in informal or low-wage jobs, and a large portion of their income goes toward food (IAI, 2024). When prices rise faster than supply, these families struggle to afford nutritious meals. Limited infrastructure, such as overcrowded markets, a lack of refrigeration, and poor water and sanitation, can further reduce food quality, often forcing households to rely on cheaper, less nutritious options. Studies from around the world show that such conditions often push urban families toward processed or ready-to-eat foods, which are easier to access but lower in nutritional value, thereby increasing health risks, especially for the most vulnerable.

Urban food systems face broader structural challenges as well. Rapid population growth often outpaces investments in storage facilities, transportation networks, and market regulation. These gaps create bottlenecks that slow down the flow of food from rural producers to city consumers. Without better logistics and supportive policies, access to affordable, nutritious food can worsen for both long-term residents and new migrants, particularly for those with limited income or social support.

In short, internal migration increases food demand in cities, stretching supply chains and infrastructure to their limits. This leads to higher food prices, reduced access for low-income households, and greater reliance on less healthy options. Addressing these challenges requires strengthening urban food systems, improving infrastructure, and ensuring that affordable, nutritious food is available to all as cities continue to grow

3) Senior Citizens and Food Insecurity

The food security of elderly households depends heavily on access to remittances and overall economic status. While migration can reduce food insecurity for some older adults, disparities remain significant. Beyond Nepal, research globally has shown that older adults are inherently vulnerable to food insecurity due to factors such as limited income, physical barriers to shopping and food preparation, health issues, and social isolation (Singh, Ghimire, & Jeffers, 2020). Multiple studies from different contexts, including high-income settings, identify economic constraints as a core driver of food insecurity among the elderly, often leading to poorer diet quality and increased health risks.

Taken together, this evidence suggests that while migration and remittance inflows can buffer some risks of food insecurity for older adults, particularly by increasing household purchasing power, structural inequalities in income and social support continue to produce disparities (NHANES 2013–18). In contexts where remittances are inconsistent, low, or absent, elderly households remain at elevated risk of food insecurity, highlighting the need for targeted social protection measures such as pensions, allowances, and community support programs tailored to older populations.

VII. DEMOGRAPHIC DIVIDEND, MIGRATION, AND FOOD SECURITY

Nepal's demographic transition offered the potential for a demographic dividend. However, extensive youth migration limits domestic economic gains and accelerates population aging, particularly in rural areas, posing long-term challenges for food systems and social protection (UNICEF, 2025).

Nepal's demographic transition has long been seen as a potential opportunity to boost economic growth, a classic demographic dividend, where a large working-age population could accelerate development if invested adequately in jobs, education, and health (Paudel, 2025). This "window of opportunity" began in the early 1990s and could last until around the 2040s, but it is not guaranteed and depends on whether the country effectively leverages its human capital.

However, extensive youth migration is reshaping this potential. With limited domestic job opportunities and lower wages at home, many young Nepalis leave for urban centers or foreign employment, particularly in Gulf countries and India. While remittances make up a large share of Nepal's GDP and help families meet immediate needs, the exodus of youth also means that the very population group needed to drive economic transformation and internal productivity gains is absent. This reduces the size of the labor force available to the agriculture, manufacturing, and service sectors, undermining the potential economic benefits the demographic dividend could have delivered.

At the same time, Nepal is rapidly aging as fertility declines and life expectancy rises (Smith & Wessel, 2023). Projections suggest that Nepal will transition to an aging society within the next decade and, over the coming decades, further toward an 'aged society', meaning that each working-age adult will increasingly support a larger number of older dependents. This changing age structure amplifies pressure on food systems, healthcare, and social protection. As fewer young people remain in agriculture or generate income, rural areas face labor shortages, reduced agricultural resilience, and slower adoption of innovations (World Bank, 2026). Meanwhile, urban centers must accommodate growing populations with rising demand for food, housing, and basic services, all while social safety nets for the elderly remain limited.

The combination of a youthful population leaving home and an aging population remaining behind creates complex challenges for food security (Nepal Times, 2024). On one hand, remittances can enhance household food access; on the other, long-term structural issues—such as weakened domestic economic productivity, declining agricultural labor, and inadequate support for aging adults may strain food systems over time. Without strategic investments in job creation, health, education, and social protection, the demographic dividend could slip away, replaced by a demographic burden that strains the economy and social services.

VIII. POLICY IMPLICATIONS

Key policy priorities include:

Expanding rural employment and non-farm opportunities

Expanding rural employment beyond agriculture is essential for reducing distress-driven youth migration and strengthening household food security. Non-farm opportunities such as agro-processing, rural services, ecotourism, renewable energy, small-scale manufacturing, and digital enterprises can absorb surplus labor while diversifying rural incomes. These opportunities reduce households' dependence on agriculture alone, which is increasingly vulnerable to climate variability and market fluctuations. By generating local employment, rural non-farm sectors can retain youth, stabilize labor availability for farming, and improve food access through regular income. Targeted investments in rural infrastructure, credit, skills training, and market access are critical to enabling inclusive rural economic transformation.

Promoting agricultural modernization and mechanization

Agricultural modernization and mechanization can offset labor shortages caused by youth outmigration and demographic aging. Appropriate, scale-sensitive technologies—such as small tractors, harvesters, irrigation systems, and climate-smart inputs—can increase productivity while reducing physical labor burdens, particularly for women and elderly farmers. Mechanization must be supported by extension services, access to finance, and cooperative models to ensure affordability for smallholders. When combined with sustainable land management practices, modernization can enhance food availability, improve efficiency, and make agriculture more attractive to younger generations.

Aligning youth skills development with domestic economic needs

Youth skills development programs often emphasize overseas employment rather than domestic opportunities. Aligning education and vocational training with national economic priorities—such as agribusiness, food systems, renewable energy, and rural entrepreneurship—can create viable livelihood pathways at home. Practical, market-relevant skills increase employability and innovation within domestic sectors, reducing reliance on precarious migration. Integrating entrepreneurship training, digital skills, and access to start-up capital can further empower youth to contribute to food system resilience and rural development.

Strengthening food supply chains and social protection systems

Resilient food supply chains are crucial for ensuring stable food availability and access, particularly in migration-affected and climate-vulnerable regions. Investments in storage, transportation, local markets, and processing facilities can reduce post-harvest losses and price volatility. At the same time, robust social protection systems—including cash transfers, food assistance, and insurance schemes—can protect households from shocks stemming from migration disruptions, climate events, or income losses. Well-designed social protection complements market systems by safeguarding food security for the most vulnerable populations.

Integrating demographic and migration dynamics into food security planning

Food security planning must explicitly account for demographic change and migration trends. Policies that ignore youth outmigration, aging rural populations, and feminization of agriculture risk becoming ineffective or misaligned with local realities. Integrating migration data into agricultural, labor, and nutrition policies allows governments to anticipate labor gaps, target support to left-behind households, and design adaptive food systems. A demographic-informed approach ensures that food security strategies remain responsive, equitable, and sustainable amid ongoing population and mobility transitions.

IX. CONCLUSION

Youth migration in Nepal has complex and far-reaching implications for food security amid the ongoing demographic transition. While remittances enhance food access and dietary quality for many households, labor shortages and demographic imbalances pose serious risks to agricultural sustainability and long-term food stability. A balanced policy approach that strengthens rural economies, leverages remittances productively, and creates meaningful opportunities for youth within Nepal is essential to ensuring food security for present and future generations.

Migration often brings emotional, social, and economic challenges for families, yet the money migrant workers send home makes a meaningful difference in everyday life. Remittances help families put food on the table by increasing their income, allowing them to buy enough food and choose better-quality and more nutritious options throughout the year. This support is especially important for poor and rural households, where farming alone often cannot produce enough food to meet family needs.

Beyond daily food purchases, remittance income also helps families invest in their future. Many households use this money to buy seeds, fertilizers, irrigation equipment, or livestock, thereby strengthening food production and improving long-term food security. At the same time, higher incomes allow families to access health care and education, improving overall well-being and opening opportunities for the next generation. These investments help households cope better with food shortages, rising prices, and climate-related risks.

Research shows that families receiving remittances usually eat a wider variety of foods than those without migrant members. Children, in particular, benefit from more balanced diets that include fruits, vegetables, dairy products, and protein-rich foods. This improved dietary diversity supports healthy growth, better nutrition, and stronger immunity, showing that remittances contribute to more than just meeting basic calorie needs.

Remittances act as a lifeline for many households, improving food access, nutrition, and quality of life. Although migration is not without difficulties, the income it generates plays a decisive role in strengthening food security, supporting

agriculture, and improving health and education outcomes. Policies that promote safe migration and encourage productive use of remittances can further increase these benefits and support long-term sustainable development.

Nepal stands at a critical crossroads where demographic transition, large-scale youth migration, and food security are deeply intertwined. While migration has become an essential livelihood strategy and remittances have significantly improved food access, dietary diversity, and household resilience for many families, the long-term structural consequences cannot be overlooked. The sustained outflow of young people is weakening agricultural labor systems, accelerating rural aging, and constraining Nepal's ability to fully harness its demographic dividend.

This study demonstrates that migration produces both opportunities and vulnerabilities across all four dimensions of food security—availability, access, utilization, and stability (Bhandari, 2024a, b, c). Remittances act as a vital safety net, yet overreliance on external income exposes households and national food systems to global economic shocks. At the same time, labor shortages, land abandonment, and declining agricultural innovation threaten domestic food production and rural sustainability.

To convert demographic change into lasting food security gains, Nepal must move beyond fragmented responses. Integrated policies are urgently needed—policies that create meaningful employment for youth at home, modernize agriculture, empower women who increasingly shoulder food system responsibilities, and strengthen social protection for an aging population. Aligning migration governance, demographic planning, and food system transformation is not optional; it is essential.

If Nepal fails to act decisively, the demographic dividend risks becoming a demographic burden. However, with strategic investments, inclusive policies, and productive use of remittances, migration can be transformed from a survival strategy into a catalyst for resilient food systems, equitable development, and long-term national sustainability.

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