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The Shifting Landscape: Population Dynamics, Migration, and Socio-Cultural Challenges Impeding Agricultural Sustainability in Nepal

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Abstract

Introduction: Nepal's farming sector, vital for its economy and livelihoods, faces significant challenges due to modern population shifts, widespread migration, and changing social customs. This article explores how these complex factors negatively impact the nation's food production and land management.

Objective: Our primary goal was to thoroughly investigate the specific ways population dynamics, people moving away (out-migration), and evolving socio-cultural norms hinder agricultural sustainability in Nepal. We also aimed to identify practical, actionable solutions to these growing problems.

Data and Methods: We conducted a qualitative systematic literature review. This involved a careful search across major academic databases, using specific keywords to find relevant studies on Nepal's agriculture, population, migration, and culture. We

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then selected and analyzed these studies to identify common themes and key insights, ensuring a broad and deep understanding of the issues at hand. This rigorous process included defining research questions, developing a comprehensive search strategy, applying strict selection criteria, and meticulously extracting and synthesizing data to ensure the credibility of our findings.

Results and Discussion: Our findings reveal critical problems: a severe shortage of farm workers, leading to abandoned farmlands; increasing pressure on fertile lands in the plains; and an aging farming population that struggles with new methods and the loss of traditional knowledge. We also found that while money sent from abroad (remittances) helps families, it often reduces direct farming involvement. Changing views that see farming as a low-status job, small divided land plots, and unequal access to resources further complicate the situation.

Conclusion: Nepal's agriculture is at a crossroads. Addressing these interconnected issues-from rural depopulation and labor gaps to shifting cultural perceptions-demands a holistic approach. We recommend modernizing farming education for youth, reforming land management, wisely investing remittances, and empowering women farmers. These steps are crucial for building a resilient, food-secure, and prosperous agricultural future for Nepal.

Keywords: *Nepal Agriculture, Rural Migration, Population Dynamics, Socio-Cultural Impact, Food Security, Land Abandonment, Agricultural Sustainability*

1. Introduction

Nepal, a landlocked Himalayan nation, has always remained agrarian to its roots. Agriculture has been the lifeblood of its citizenry, shaping their culture, profession, and economy for centuries. Agriculture still remains the most important sector to this day, contributing immensely to the nation's Gross Domestic Product (GDP) and employing a vast majority of its citizens (IFPRI, no date; CBS, 2023). It is not just a matter of making food; it is a lifestyle, traditional knowledge passed from one generation to the next, and the very social fabric of rural communities. The rhythm of day-to-day life in much of

Nepal is still dictated by planting seasons, harvests, and the laborious tending of livestock.

But this vital sector that has sustained millions for centuries is now standing at the crossroads. It is faced with a complex array of modern challenges that are irretrievably changing its shapes and casting doubt over its long-term viability. These challenges are not simple; they are interconnected and are a product of fast-paced demographic transition, mass out-migration, and shifting socio-cultural values.

For example, traditional farming practices, once admirably adapted to local ecologies and social dynamics, are struggling to resist these new pressures. Villages once full of farming life now wear the signs of degeneration, with fewer young hands to work the fields. Not only is this a financial matter; it is a social and cultural emergency, impacting family structures, community cohesion, and the very identity of rural Nepal.

Population dynamics also play a significant role. Whereas population is increasing in some regions, the fertile Terai plains, for instance, increasing pressure on land, other regions, the harsh hills and mountains, are emptying out at a rapid rate. This imbalance has caused a paradox: a shortage of labor for farms in one region and intense competition for smaller plots of land in the other. The aging of the farming population, with the youth migrating out in search of opportunities, is causing the non-transfer of useful traditional knowledge, which is at risk of being lost permanently.

The out-migration pattern, particularly of young males in quest of work abroad, has been a feature of modern Nepal. There are now millions of Nepalese

working in Qatar, Malaysia, or Saudi Arabia, and they remit billions in return. While these remittances are a lifeline to the majority of these families, pulling them out of poverty and improving their living standards, their impact on agriculture is a double-edged sword. On the one hand, the money can be used to buy food, and it becomes unnecessary for the families to turn to farming. On the other, it causes a severe shortage of farm labor, with fields left unplanted and reducing local food production. The "feminization of agriculture," as women take on more farming responsibilities amidst male out-migration, attests both to the strength of Nepali women and to the added burden they carry.

Moreover, profound socio-cultural change is subtly yet powerfully undermining the agricultural sector. There is a growing perception, especially among the youth, that farming is a low-prestige activity that is unattractive. The glamour of city employment, state employment, or foreign employment has come to overshadow the old status that once attached to farming. This attitudinal shift would imply that even if farming were made more profitable, it would still lose out in terms of drawing and retaining talented individuals. Inheritance laws governing land, which create land fragmentation, also operate against contemporary commercial agriculture. Deep-seated social inequalities, particularly for women and marginalized communities, also limit access to fundamental resources like land ownership, credit, and modern agricultural technologies, generating imbalances among different farming communities.

This article aims to closely examine these interconnected factors – population change, migration, and cultural changes – and their respective negative impacts on Nepal's agricultural sustainability. We will depend on a systematic review of existing literature to establish the key issues, explore their implications, and

more significantly, recommend concrete, actionable solutions. Our goal is to enlighten a deeper understanding of such challenges and to offer realistic pathways for Nepal to craft a more resilient, food-secure, and prosperous agricultural future. By understanding the causes of these difficulties, we can better equip policymakers, development practitioners, and local communities to help Nepal's farmers and ensure the long-term vitality of this foundation sector. If the underlying pressures are not resolved, Nepal can expect increased reliance on food imports, further rural decline, and the erosion of its unique cultural heritage linked to the land. It is the hope of this research to become a guiding light for sustainable agricultural development in Nepal, such that the heritage of its farms will continue to nourish its people generations hence.

2. Literature Review

There exists a vast amount of academic and development-oriented research that has consistently highlighted the multifaceted challenges of Nepal's agriculture sector. These are often inextricably intertwined with dynamic demographic change, widespread human mobility (internal as well as international migration), and evolving social and cultural norms. A thorough review of this existing body of knowledge is necessary in order to properly diagnose the problems and recommend effective, context-specific interventions.

A striking and recurring motif in the literature is the extensive depopulation of rural areas, most acute in Nepal's ecologically fragile and economically disadvantaged hill and mountain zones. Researchers across the board observe that younger, economically productive individuals are increasingly abandoning their ancestral villages. Their destinations are typically Nepali

urban centers or, more frequently, foreign labor markets, driven by aspirations for better economic opportunities, access to education, or simply a refuge from the tough, low-status, and often unpaid toil of subsistence farming (Timsina, 2024; Chidi et al., 2025). This chronic demographic exodus generates an acute and increasing deficit of agricultural labor that renders the continuation of labor-intensive traditional farming systems unsustainable. Consequently, extensive tracts of erstwhile cultivated and fertile agricultural land are progressively being abandoned and reverting to fallow, covered with scrub and uncontrollable vegetation (Regmi & Karki, 2010; Chidi et al., 2025). This phenomenon not only directly compromises national food production capacity but also exacerbates environmental vulnerabilities, such as increased soil loss on deserted terraced landscape.

On the other hand, research concentrating on the Terai plains, which are the agricultural breadbasket of Nepal, highlights a different array of pressures. The Terai continues to face high population growth, driven by both natural increase and internal migration from the depopulating hill areas (PRB.org, no date; CBS, 2023). This rising demographic density places tremendous pressure on limited arable land resources. One omnipresent phenomenon is the prevalent problem of land fragmentation, where agricultural land is progressively split into smaller and frequently economically unviable holdings. The fragmentation has been largely brought about by deeply entrenched traditional inheritance law mandating equal division between male inheritors (UNM Digital Repository, no date; CBS, 2023). Such disaggregation limits the application of modern, large-scale farming techniques, efficient utilization of farm machinery, and attainment of economies of scale, compelling the farmers

to unsustainable intensification approaches in a bid to obtain highest attainable yields from very tiny holdings.

The second important factor taken into perspective in the literature is the aging of the farming population. The continuous out-migration of the young necessarily makes the average age of remaining farmers increase continuously (Timsina, 2024). This aging presents multifaceted challenges: an aging farmer population can have reduced physical capacity for strenuous farm labor, be less receptive to new farm technologies and practices, and simply have less access to modern inputs or financial services. More fundamentally, this intergenerational shift provokes an alarming acceleration of the loss of traditional ecological knowledge (TEK). This valuable, localized knowledge encompasses sophisticated information on indigenous crop varieties, regional climatic patterns, sustainable water utilization systems, and resilient farming techniques that had always been orally transmitted from one generation to the next (Regmi & Karki, 2010). Its permanent loss jeopardizes the long-term adaptability and sustainability of Nepalese agriculture amidst evolving environmental and climatic circumstances.

The extensive literature on out-migration documents its widespread, multidimensional impacts on Nepal's rural setting. While the gargantuan inflow of remittances from Nepali migrant laborers abroad is a vital economic lifeline for tens of millions of rural households, cutting poverty drastically and enhancing food security by enabling food purchases (World Bank, no date; Thapaliya et al., 2025), its implications for the agricultural sector are complex and often contradictory. Scholarship clarifies that while remittances build household resilience, they also, paradoxically, can lead to the downgrading of

active agricultural engagement, since households become less reliant on agriculture as a primary livelihood strategy (Timsina, 2024). This contributes to the observed patterns of land abandonment and decline in domestic agricultural output. Yet the same research also mentions a beneficial dimension in that return migrants can introduce new technology, entrepreneurial skills, and capital, investing at times in mechanization to plug labor shortages (World Bank, no date). The feminization of agriculture—the increasing proportion of women assuming farming responsibilities in the aftermath of male out-migration—is a well-documented phenomenon, one that testifies both to women's impressive resilience and the inequitable burdens that women often bear (Sharma et al., 2020).

Finally, there are deeply rooted socio-cultural challenges that exert pervasive and often insidious pressures on the sustainability of agriculture. Among the key cultural changes is the common and growing societal perception, particularly among aspirational youth, that agriculture is an undesirable, low-status, physically demanding, and financially unrewarding career (Timsina, 2024). This social downgrading of agriculture actually discourages younger generations from pursuing agricultural careers, further exacerbating the labor shortage and dampening innovation. Moreover, deep-rooted social stratifications and unequal access to important resources continue to marginalize some communities, notably women, Dalit communities, and indigenous peoples (Sharma et al., 2020). These structural disparities restrict their access to productive land, formal credit, important agricultural extension services, and new technology, thereby inhibiting inclusive agricultural growth and perpetuating productivity differentials within the population of farmers.

The literature reviewed here collectively presents a sobering image of an industry struggling.

3. Research Methodology

To have a clear vision of the complex interaction between population dynamics, migration, and cultural problems affecting Nepal's agriculture, we followed a careful methodology called a qualitative systematic literature review. What we did is systematically search, select, and review existing studies and reports in order to take an overall perspective. This is how we went about it:

3.1. Simple Research Questions: Second, we set our main question: "How do population change, individuals moving out of the nation (out-migration), and cultural issues affect agriculture in Nepal, and what could be the solutions?" We also asked smaller questions such as: What are the greatest population changes? How do different migration types affect farm labor and land use? What cultural customs help or hurt agriculture? And what government and community interventions have been effective or could be effective?

3.2. Extended Search Strategy: We searched several trusted academic databases, including ResearchGate, Google Scholar, JSTOR, Scopus, and Nepali university online libraries (for instance, Tribhuvan University). We used distinctive keywords and phrases to obtain relevant studies. These were: "Nepal agriculture," "population dynamics Nepal," "migration Nepal agriculture," "rural-urban migration Nepal," "international migration Nepal," "feminization of agriculture Nepal," "land abandonment Nepal," "socio-cultural impacts agriculture Nepal," "challenges in Nepalese agriculture,"

"solutions for agriculture Nepal," "food security Nepal," "rural livelihoods Nepal," "agricultural policy Nepal," "youth in agriculture Nepal," and "remittances agriculture Nepal." We used search operators like "AND," "OR," and "NOT" to intersect or exclude terms and narrow down our searches. For example, a search would be such as: ("Nepal agriculture" AND (\"migration" OR "population dynamics") AND ("challenges" OR "impacts")).

3.3. Strict Selection Criteria for Studies: To make sure we had only the best quality and appropriate studies included, we used strict rules. Studies were deemed included if they:

• Were explicit regarding Nepal.

• Were explicit regarding at least one of our major factors: population change, migration, or culture.

•Spoke regarding how such variables influenced Nepal's agriculture (e.g., quantities of food yields, land utilization, workforce, food supply, and way of life).

•Were in English. If a Nepali study was important and we could summarize its points of importance from the abstract or core parts, we also included it.

Separately enclosed studies that used qualitative (exploring meanings and experiences) or mixed methods (combining qualitative and quantitative data). We enclosed quantitative studies also that provided us with valuable numbers for our qualitative claims.

Published in the form of peer-reviewed journal papers, reputable books, book chapters, conference proceedings, PhD research, or official reports of well-established national or international organizations (e.g., FAO, World Bank).

We have not included studies that were not on Nepal or its agriculture, those that were purely on environmental topics without a clear connection to our social variables, opinion pieces that were not backed by evidence, or those that were published before the year 2000, unless they were extremely significant older studies that remain relevant to date.

3.4. Extracting Information and Determining Themes Carefully: Once we had determined the studies in mind, we removed crucial information like the purpose of the study, how it was carried out, its results, arguments, and conclusions. We then utilized a method called thematic analysis. What that means is that we read through all that we had removed to determine common ideas, developing themes, contrast, and important insights. That involved:

• Initial Tagging: The process of applying simple labels or "codes" to portions of text that seemed important or interesting.

Developing Themes: Organizing the similar codes into broad, overarching concepts or "themes" that addressed our research questions directly. To illustrate, codes like "young people seeking foreign jobs" and "outmigration from the villages" fell under the theme "Labor Shortages and Rural Depopulation."

Refining Themes: Constantly checking and improving these themes to make sure they were clear, complete, and truly represented the information. This also involved finding smaller ideas within the main themes.

Putting Findings Together: Weaving all these themes into a clear story that answered our research questions, showing connections between different studies and highlighting where researchers agreed or disagreed.

3.5. Verifying Quality and Credibility: Even though we did not use formal quality check tools (which are standard for number-based research), we did verify the trustworthiness and suitability of every source on our own. This consisted of analyzing the reputation of the journal or publisher, how thoroughly the study documented its methods, how hard they worked to collect and analyze data, and if their findings were consistent with what other studies had found. We gave higher priority to studies that used apparent methods and strong evidence in an effort to make sure conclusions.

4. Results and Discussion

Our close review of many different studies showed clear trends. Nepali population changes, especially the manner in which people move about, are truly changing the face of agriculture.

4.1. Not Enough People to Farm, Vacant Land, and Aging Farmers

One of the biggest and most damaging trends in Nepal, especially in the challenging hilly and mountainous areas, is that more and more people are no longer settling in villages. Young, able-bodied people are leaving. They migrate to larger Nepali towns or even overseas because they want better jobs, more education, or just to escape the hard and frequently undervalued work of farming (Chidi et al., 2025; Timsina, 2024). This large-scale exodus of people means that there is a huge and growing lack of farm workers.

What is the result of this? Once productive and fertile land is being left fallow increasingly. It slowly starts turning into bushy patches with weeds and uncultivated grasses (Chidi et al., 2025; Regmi & Karki, 2010). This means that fewer crops are being grown, and this also leads to other problems like more soil erosion on slopes that no one is tending anymore.

Imagine this: A regular village in the hills of Gorkha or Lamjung would have had several kids, and they all worked on farms from a young age. Now, the same family might have only two children, and they both off to Kathmandu to study or to a place like Dubai for work. The terraced farm parents can't move as much soil on their terraced land as they once could by themselves and must farm reduced plots or leave whole plots unplanted. The laborious stone walls supporting these fields start to crumble, and weeds and brambles take over. It doesn't just lead to less food; it also hurts the environment. The farm landscape is now empty that was once filled with activity, affecting the food supplies of the local areas and potentially causing the country to rely more and more on imported food. This is especially bad in areas where there is poor road infrastructure, few markets, and not much else to live for but farming, which just adds more people to leave.

4.2. Overloading of Farm Land in the Flat Plains (Terai)

Conversely, while the hills are declining in numbers, the extremely populous Terai plains, commonly referred to as Nepal's primary food-farming region, are continuing to increase in population, both naturally and from individuals migrating there from the hills (PRB.org, no date; CBS, 2023). This increased pressure of more people essentially translates into an enormous need for the available farm land. The Terai has most of Nepal's best farm land, but with more people, it has to yield more food even as there is less land available per person. This tends to work out as unsustainable agriculture and farm land conversion to something else.

Think about this: In the extremely fertile areas of Rupandehi or Morang, land keeps getting divided into smaller plots. This is all because of archaic laws of inheritance which require land to be divided among all the male children (UNM Digital Repository, no date). This leaves the individual farms shrinking

in number and size and most often they prove to be too small to make a good living. To try and extract as much as they can from their marginal holdings, farmers will use excessive chemical fertilizer and pesticide, and pump excessive groundwater to water their crops. This can lead to the degradation of the soil, depletion of groundwater, and pollution. Furthermore, as industry and urbanization are spreading fast in the Terai, productive farm land is being irreversibly transformed into houses, commercial establishments, and factories. For instance, large rice paddies on the edges of cities like Biratnagar or Butwal are being turned into concrete buildings, permanently removing the total land used to grow food. The two-sided pressure – a lot of people on already cultivated land and losing land used for farming to other uses – is a very real danger to Nepal's future food supply and sustainable agriculture.

4.3. Older Farmers and Forgetting Old Skills

A serious consequence of the migration of young people is that the remaining farmers are getting older. When young people migrate, the age of agricultural laborers keeps increasing, leading to a major gap in terms of who remains to work the land in villages. This greatly affects how much food can be farmed and farming's sustainability.

For example: In most rural villages, you will only see elderly men and women performing hard farm work. They can lack the physical energy or resources to achieve modern farm tools for successful farming. This older generation is also less open to new farm technology, new methods of doing things, or new forms of farming based on selling crops, much as they have less education, are afraid of risk, or simply have done things the old way all along.

More crucially still, the steady migration of the young out of the villages means that an enormous gap is opening up in the passing on of valuable traditional ecological knowledge (TEK). These traditional or indigenous knowledge include information on native seed varieties, nuances of climate and weather patterns, traditional irrigation systems for cultivating crops based on the local climatic conditions, and sustainable land management techniques. Such indigenous knowledge is being lost fast that had been passed down through generations orally. Without youth to acquire and practice this information,

there is a great risk of losing local crop diversity, misusing natural environments in the local community, and forgetting traditional, tried-and-true sustainable practices that are generally more difficult and less harmful to the environment than new, imported methods. This generation gap is an especially dangerous threat to agriculture's cultural heritage and Nepal's natural environment in the long run.

4.4. Out-migration of People and its Impacts on Farms

While "immigration" normally suggests individuals coming into a country, in Nepali agriculture, the majority and most important trend is the large numbers of its own nationals leaving (out-migration) to work overseas. This vast flow of workers, with millions of Nepali workers toiling abroad, has severe, complex, and often surprising impacts on agriculture, creating problems and some unexpected opportunities.

4.4.1. Not Enough Workers and More Women Working in Agriculture

The simplest, widest, and most immediate effect of young men (and increasingly young women) leaving the country is a severe and rising deficit of workers in agricultural areas (Gauchan, 2018; Thapaliya et al., 2025). The deficit of male farm labor has subsequently led to a massive rise in females working on farms. Women today bear an extremely higher and unequal load of farm work, frequently on top of their long hours of household and family care (Sharma et al., 2020). While women have always been at the center of Nepal's agriculture, doing the majority of the farm labor, the volume and intensity of their workload have grown exponentially, pushing them to their physical and psychological limits.

Consider it: in a hill district such as Dhankuta or Syangja, within a farming family, the husband and occasionally even the eldest son might be employed in the Middle East (Qatar or Saudi Arabia) or Malaysia and sending money home. His wife, who often lacks formal education, cannot own the land legally, and does not have access to loans and new machinery, is left to do all work of farming. These involve very demanding tasks like plowing (most often using outdated equipment since male ox-plowing labor is absent), sowing, weeding,

harvesting, crop processing after harvest, and giving tough care to animals. This flood of work, compounded with decreased male support, often leads to delayed planting, less productive farming methods, and overall farm productivity and output decline. While this demonstrates the abilities of women, it also reflects the huge stresses that are entailed, which can lead to burnout, sickness, and overall poorer quality of life.

4.4.2. Remittances: A Mixed Blessing for Farming

Remittances, money sent back by migrant workers, are a very important source of income for village households in Nepal (World Bank, no date). Payments certainly raise family income, considerably reduce poverty, and enable households to produce enough food by making them able to buy food instead of just growing food (Thapaliya et al., 2025). However, their total input towards the agricultural industry is complicated and at times called a "mixed blessing." While remittances help alleviate short-term money problems, they can strangely lead to less engagement in agriculture, as families rely less on it for their major source of funds (Timsina, 2024).

For instance, a household that receives cash on a regular basis, say NPR 30,000 to 50,000 (approximately $225-$375 USD) per month, will probably find it easier to spend less effort, time, and money on their land cultivation. Instead of hard plowing the land for planting rice, wheat, or maize, they will probably like buying these commodities in near-by local markets. They might enjoy their off time more or pursue other lines of work that are less physically demanding. This change can happen in many forms: they might farm less land, engage in transition crops that involve less work but might not be as profitable (such as vegetables if there is a good market, or simply leave land unused), or even leave farm work altogether. While this relieves their immediate need for food and offers them alternative sources of income, it also adds to the general issue of idle land, less food production, and general decline in farm activity in the community. Furthermore, remittances to the home country are often spent on non-agricultural endeavors, such as children's education, the building of new concrete houses, healthcare, or the initiation of tiny non-agricultural enterprises (e.g., shops or tea stalls). While these expenditures undoubtedly

help increase and enhance the quality of life in villages, they also divert crucial money and interest from farming, hastening its decline.

4.4.3. Diffusion of New Technologies and Changing Crop Patterns

Despite the problems, migrants can also act to spread new farming technology and new ideas to village society. Migrants, returning home or through their contacts, may not only bring money but also beneficial information, exposure to alternative farming practices, and a greater receptiveness to adopting new farming approaches. These include better seeds, chemical fertilizers, better ways of watering crops, and even machinery (World Bank, no date). Nevertheless, the new methods are often adopted since the farmers must innovate in order to make up for the acute labor shortages.

For instance: A migrant who has returned from Korea, upon exposure to Korean modern farming, might spend some of his savings on the purchase of a paddy-sowing machine or a small tractor. This reduces the labor demand to plow and sow, which is now limited and expensive. Similarly, education abroad can lead to importation of high-yielding varieties of crops that, while involving less labor, might call for additional foreign inputs like specific fertilizers or pesticides. This changes the conventional farm planting patterns and makes farmers more dependent on the foreign market. For example, classic local rice varieties that are low-yielding but robust and have few inputs might be replaced with water- and pesticide-hungry high-yielding hybrid rice. This can affect local plant diversity, increase the price of cultivation, and alter the type of food eaten, but it is often the felt answer to keeping up with changing labor levels. In addition, also coming back are some migrants with skills in some valuable farming techniques like greenhouse agriculture, mushroom culture, or commercial vegetable farming, trying to set up these businesses in their native villages, thus introducing new aspects into local farming systems.

4.5. Cultural Issues and their deep impact on Farms

Apart from the quantifiable population and migration dynamics, the insidious yet potent trends in local traditions, beliefs, and customary practices in Nepalese society pose a definitive and daunting set of issues before the nation's

agricultural industry. Such issues tend to be deeply rooted and need thoughtful appreciation and solutions that respect local culture.

4.5.1. Changing Perceptions and Young People's Loss of Interest

One of the deep and far-reaching Nepalese cultural transformations is the growing belief, especially among enterprising youth, that agriculture is a bad, low-status, manual job, and ultimately un remunerative profession (Timsina, 2024). This negative image is caused by so many reasons: the historically poor returns of conventional agriculture, the lack of new equipment and innovative ideas in the sector, and the high pull of non-agricultural employment, especially the promise of improved remuneration and "better life" through overseas jobs.

Consider: It is not rare to come across parents from rural villages, who have worked all their lives in the fields, urging their children to get educated, typically with the very specific goal of securing a "sarkari job" (government job) or emigration overseas. Farming is more often than not a "last resort" for people who cannot achieve these other goals. This overall underestimation leads to a vital shortage of passing on farming knowledge from one generation to the next and blocking new innovations within the sector because the most vibrant and wise youth pursue other opportunities. For instance, youth pursuing agriculture studies in Nepalese universities also prefer working in non-governmental organizations, governmental offices, or even securing employment abroad in non-agriculture sectors rather than going back to the village to be farmers, despite efforts to modernize agriculture and commercialization. This deep-seated bias against farming means that even if farming was more profitable, it would be very hard to attract and keep young, educated people into the sector.

4.5.2. Small, Fragmented Land and Outdated Inheritance Laws

Nepal's history of long-standing inheritance system, which has traditionally entailed dividing family land between all sons, has led to a serious and persistent problem of land fragmentation (UNM Digital Repository, no date; CBS, 2023). This results in farm parcels that are not only declining but are also

usually scattered across large numbers of geographically distinct areas. This fragmentation is extremely difficult to utilize sophisticated, large-scale agricultural methods, utilize machines profitably, and make agricultural businesses truly profitable.

For example: Let's say a household has a combined amount of one hectare (approximately 2.5 acres) of land. Within one generation, the hectare can be subdivided into five 0.2-hectare plots, and these plots may be on different levels on a hillside or at some distance from the house. In the second generation, the small 0.2-hectare plots are subdivided further. This extreme fragmentation is too expensive to cultivate using even little tractors or other modern machinery, as moving equipment from many small, scattered plots is time-consuming and costly. It also hinders the implementation of good irrigation systems, complicates pest control across various plots, and prevents farmers from reaping the benefit of growing large amounts of one crop. Farmers may also spend a lot of time just commuting back and forth among their many small parcels of land, lowering the productivity of their labor. The lack of contiguous land means that even if a farmer would like to try out a new, profitable cash crop, the small, individual parcels might not be suitable or are too small to sell commercially, forcing them to be stuck in low-output subsistence farming.

4.5.3. Losing Old Farming Wisdom

Since the generations above us, which own vast and irreplaceable traditional ecological knowledge (TEK) about local crops, complex weather patterns, water preservation methods, and adaptive agricultural practices, slowly perish or reduce their active involvement in farming, such distinctive knowledge is under threat of being lost irretrievably (Regmi & Karki, 2010). Younger generations, increasingly alienated from their agricultural roots and drawn to urban or foreign work, simply don't have the chance, the desire, or the gratitude to learn and transfer this expertise.

Consider this: Consider the hundreds of Nepali rice varieties grown for centuries in Nepal, each uniquely developed to suit particular local climates, soil types, and resistant to local diseases. These varieties have a natural

immunity to native diseases or can survive dry periods, which commercial hybrid seeds cannot always do. But as the old-fashioned farming is slowly disappearing and there is more of a focus on higher yields, these native seeds are fast losing their use as individuals go for commercial hybrid seeds. While hybrids offer yield benefit in the short run, they are higher in fertilizer and pesticide use, less adaptable to local weather shocks, and lead to a drastic loss of genetic diversity, making the whole farming system more vulnerable. Similarly, traditional soil conservation methods like contour plowing, terracing, or employing certain organic manures, which have proven effective generation after generation, are sometimes substituted with less effective modern methods for lack of knowledge or perceived convenience. The TEK that is lost goes beyond crop types; it includes knowledge of local medicinal plants, agroforestry for animal feed and energy, and traditional weather forecasting techniques, all of which are directly connected to the sustainability of farm livelihoods. The loss of this knowledge represents a serious threat to long-term sustainability and Nepal's agriculture being able to adapt to climate change as well as other environmental challenges.

4.5.4. Social Position, Power Inequalities, and Inaccessibility to Resources

Large social stratification, power inequalities, and traditional norms can drastically limit fair access to important agricultural resources like productive agricultural land, formal credit, new technology, and critical farm advice for disaffected groups. Such groups are women, various Dalit communities (traditionally deprived groups), indigenous people, and members of lower economic groups (Sharma et al., 2020). These entrenched gaps create inequalities, hinder overall farming development, and lead to a large part of the farming population being unable to exploit its full potential.

For example: Even though they undertake most farm work because men have left in search of employment, women often have difficulty obtaining farm credit or legally owning land due to prevailing male-centered traditions and unclear legislation. Lacking land security, securing a bank loan is nearly impossible, and they must rely on money lenders who charge them very high rates of interest. This hinders them from investing in better seeds, better farming implements, or new technology. Similarly, Dalit group members, who

are usually marginalized, may be discriminated against in sharing common communal land, irrigation services, or even by equitable counsel from farm extension agents, who may prefer larger or more powerful farmers. This creates a vicious poverty and low-yielding production cycle among these groups, creating an inefficient farm system that is unable to utilize a huge amount of its human and land potential. Shattering these deep-rooted social barriers is not possible through legal reforms alone but also through radical changes in social attitudes and the relations of power.

5. Implications and Recommendations

Solving the complex, multi-dimensional problems facing Nepal's agriculture industry calls for a clever, multi-dimensional strategy more than just diagnosing problems. It must yield practical, actionable solutions. These recommendations aim to guide government ministers, development agents, local communities, and small farmers towards a stronger, more productive, and more sustainable farming future.

5.1. What These Problems Mean (Implications):

1. For Food Supply: With less farm workers and vast areas of land lying unused in the hills, Nepal's ability to produce food domestically is declining. This means that the nation will have to import increasing amounts of food from overseas, which will leave it vulnerable to rising food prices overseas and supply chain problems.

2. For Village Livelihoods: Even though economic remittances from abroad (remittances) provide significant family income, being less agricultural-dependent is such that village societies have fewer livelihood sources. This can make them more susceptible to foreign economies as well as to economic disasters in the nations where Nepalese workers.

3. For Land Management: Uncontrolled subdivision of land into pieces in the Terai and increasing land abandonment in the hills lead to wasteful use of land. This makes it hard to make use of machines and manage natural resources efficiently, which in turn leads to environmental degradation.

4. For Gender Equality: With more women entering farm activities, while showing off their strength, heaping gigantic and unbearable burdens on women farmers. This can have negative impacts on their health, education, and welfare because of the intensive workload and unavailability of resources.

5. For preserving knowledge: farmer aging and youth exit speed up the loss of valuable old farming expertise. It diminishes the ability of future agriculture

techniques to adapt and may eventually make them uninhabitable under local conditions, especially when there is climate change.

5.2. What Needs to Be Done (Recommendations):

Recommendation 1: Involve the Young in Farming and Help Them Get New Skills

1.1. Overhaul Farming Education and Practical Training: Overhaul farm school curricula from primary through university. Teach current farming methods, managing a farm business, how to use digital technology (e.g., drones for crop inspection, selling online markets), and starting your own farm business. Open practical schools of farming in all rural areas.

Establish a "Prime Minister's Youth in Agriculture Scholarship" for 1,000 Nepalese young people each year. The scholarship would make it possible for them to acquire special training in beneficial agricultural fields (like organic farming, soilless plant production, flower culture, or commercial animal production). After training, they would also be given guaranteed access to funds to start their enterprises and to markets.

1.2. Provide Incentives for Young Farm Enterprises: Provide enticing financial incentives (such as low-interest loans at 2-3%, no tax for the initial 5 years, and matching capital if they invest in new machinery) and other assistance (such as business counselors, market intelligence, and common facilities for crop processing) to young entrepreneurs who establish commercial farms and food processing units.

Example: Create "Agri-Tech Incubation Centers" in large agricultural regions. These centers would provide accommodation, expert advice, and networking opportunities for youth farm businesses, as there are successful models in India or Bangladesh.

1.3. Share Success Stories and Change Attitudes: Conduct national TV, radio, and social media campaigns to showcase successful young people in agriculture. Highlight farming as a professional, respectable, and remunerative vocation.

Create a yearly "National Youth Agri-Innovation Challenge" with big cash prizes and global recognition for innovative agricultural solutions designed by Nepalese youth.

Recommendation 2: Smart Land Management and Fair Land Reforms

2.1. Promote Voluntary Land Consolidation by Farmers: The state can implement transparent policies and legislation to persuade farmers to voluntarily consolidate their small, fragmented pieces of land. Offer incentives such as simplified registration of land, less cost for land survey, and first priority for access to irrigation facilities and farm loans to facilitate them to do so.

Example: Launch a "Land Bank Initiative" in the identified good agricultural lands. Farmers may voluntarily contribute their fragmented parcels of land to this bank. Later on, these aggregated bigger parcels may be managed as a whole by groups of farmers or rented out to bigger commercial farms with long-term agreements protecting the land rights and equal profits.

2.2. Strictly Enforce Land Use Zoning: Set up and strictly enforce comprehensive land use planning for provincial territories and local areas. The plans should specify key agricultural lands in detail and block them from being transformed into city land, factories, or shops.

Example: Establish "Green Belt" zones around big cities in the Terai, where agricultural land to be built upon as housing or industry is forbidden or extremely costly. Incentives can be offered for building higher-rise structures within cities to reduce how much land is being used as farm land.

2.3. Encourage Utilization of Barren Land: Offer support schemes (like expert guidance, affordable land-clearing materials, or cooperative farming methods) to encourage farmers to till unused or abandoned land, especially in the hill areas.

Example: Implement a "Productive Land Revival Scheme" that provides a one-time grant or interest-free loan to groups of farmers or cooperatives who

collaborate to restore and farm once-abandoned agricultural land, especially for worthy crops or planting trees that also benefit farming.

Recommendation 3: Use Money Sent from Abroad Wisely for Farming

3.1. Create Special Financial Products for Migrant Money: Create special farm loan and investment products by banks and cooperatives specifically for migrant returnees or their relatives. These should have high-interest rates, easy collateral demands, and repayment schedules tuned to agricultural seasons.

Establish a "Migrant Agri-Investment Bond" under which Nepalese abroad can invest their savings directly into large-scale agricultural activities in Nepal (e.g., fruit processing units, cold storage units, or major irrigation networks). The bond will give a guaranteed yield and will make them feel that they're doing something for their country.

3.2. Provide Investment Advice and Technical Support: Create special "Migrant Remittance Advisory Desks" within farm advice centers or village banks. These desks would offer expert advice to returning migrants on proper farm investments, how to connect with the market, and technical support.

Example: Work with agencies that help individuals find employment abroad to make pre-departure training available as well as in-country training upon arrival. This would be aimed at prioritizing Nepalese farming opportunities and introducing potential farm investors to related government programs and private businesses.

Recommendation 4: Strengthen Local Traditions and Engage Everyone

4.1. Empower Women Farmers and Ensure Fair Access: Make profound changes in laws and policies to grant women equal rights to owning land, be able to take loans from banks without the need for a male relative's signature, and have a guaranteed voice at every level regarding farming concerns.

Create "Women Farmer Resource Centers" per local government unit. The centers will assist in legal support for land registration, special training for women on farming technology suitable for them, easy access to small loans for

women farming associations, and childcare support during training to enable more women to participate.

4.2. Integrate Old Wisdom and New Science: Create organized programs for recording, conserving, and integrating indigenous traditional ecological knowledge (TEK) with emerging scientific advances. This will help create farming practices better adapted to local environments and climate change.

Example: Build "Living Seed Banks" and local communities together. The banks would conserve gene bank holdings of local traditional crop varieties and traditional farm animals, ensuring diversity and resilience. Also, support research where farming universities and experienced farmers work together to optimize traditional farming methods scientifically and promote their use with new suitable technologies.

4.3. Promote Farm Tourism and Other Village Businesses: Encourage investment in farm tourism (agro-tourism) routes and actively promote other small village businesses (like village guesthouses, village crafts, or nature tourism) to explore other income activities for villagers and stimulate villages and make them more attractive.

Example: Create a "Nepal Agri-Tourism Brand" to take Nepal and international tourists to farms, stay in farmhouses, and enjoy local food festivals. This would benefit farmers directly financially and market Nepal's rich agricultural history.

4.4. Fight Social Stigma: Launch focused public campaigns to shift adverse attitudes towards farming. Highlight the success of successful young and innovative farmers. Promote farming as a respectable, professional, and profitable vocation.

Example: Set up national awards like "Excellence in Farming" and "Youth Agri-Innovator of the Year." They would reward and celebrate the success of successful farmers and present them as role models to schools and society.

6. Conclusion

Nepal's agriculture sector is at a very critical juncture. It's under very strong influence of intricate changes in its demography, the general drift of people away from their villages, and changing social norms. The issues are gigantic: villages are decaying, fertile lands are being abandoned, there's a severe shortage of labor because youth are migrating away, and there's a pervasive notion that agriculture is difficult work which is not rewarded. While the never-ending flow of funds sent from abroad gives many village families their economic lifeline, its huge potential to drive farm development remains untapped.

In order to address such interconnected and intricate problems, Nepal needs an integrated, holistic, and visionary strategy. By investing smartly in and directly urging youth to pursue agriculture, by making fair modifications to land policies that rectify historic problems and present inefficiencies, by conscientiously directing remittances received from abroad into productive agricultural investments that pay long-term dividends, and by conscientiously fostering and building solid local traditions that respect and empower agriculture, Nepal has a unique chance to fully remake its agricultural sector. This transformation would transform agriculture from an easy, open occupation into a dynamic, profitable, environmentally friendly, and socially appealing way of life for its growing numbers. This grand and bold proposal isn't just a good idea; it's downright necessary. It is not only essential for ensuring the food security of Nepal but also for sustainable growth in the overall economy, environmental conservation, and long-term health and stability for the country as a whole. The future of Nepal hangs very much on how much more robust and sustainable its agriculture becomes.

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