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# The Link between Water Scarcity and Forced Migration: An In-depth Analysis of Chaubise Rural Municipality Ward No 3 and 4, Dhankuta District

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## Abstract

Using inductive and deductive methodologies, this study uses a mixed-method research design to examine migration patterns in Chaubise Rural Municipality Wards No. 3 and 4, Dhankuta District. A thorough study was built using quantitative data that was gathered using structured questionnaires and qualitative information. The study reveals a noteworthy occurrence of permanent migration, primarily driven by economic development, increased work opportunities, restricted access to clean water, and conflicts between people and wildlife. Economic expansion and better job chances stand out among these elements as the main inducers of migration. Access to drinking water is still a critical issue, although it is a secondary element due to communities' historical rejection of piped drinking water services and related levies.

*Keywords:* water access, enough resources, drinking water systems, inaccessibility, migration.

## Introduction

The lack of clean drinking water has a substantial impact on migration patterns. Migration trends and the pressing need for equitable access to basic facilities are inseparably linked, with access to this crucial resource playing a major role in driving population movements. Increasing access to clean water and sanitation is a major

global development priority, with nations all over the world working to achieve this goal (Nagabhatla et al., 2020). This project emphasizes how important it is to take care of these necessities in all-encompassing plans meant to lessen the difficulties associated with water-related migration.

Due to its crucial role in promoting development, access to clean drinking water and sanitary facilities has become a global priority (Swiss Agency for Development, 2020). Despite being a crucial common good and a crucial component of the global commons, water distribution among countries continues to be unequal. It is impossible to exaggerate the importance of water to life and sustainable development. A variety of health problems, including cholera, typhoid, diarrhea, and other waterborne diseases, are brought on by a lack of clean drinking water and sufficient sanitation and endanger people's well-being (World Bank, 2017).

Numerous nations around the world have given management of drinking water and sanitation a high priority due to the seriousness of this issue. Collaborations like the "Sanitation and Water for All" (SWA) global partnership, involving governments, the private sector, civil society organizations, and development partners, seek to boost political leadership, improve accountability, and maximize resource utilization for universal access to sanitary facilities and potable water (Government of Nepal, 2014).

The commitment to bettering water and sanitation management began with the 1992 Rio de Janeiro UN Conference on Environmental Development and the 1992 Dublin International Conference on Water and the Environment, which supported participatory methods involving stakeholders at all levels (WMO-UN, 1992; Aslam et al., 2016). By highlighting the critical role that water resources play in reducing poverty and fostering economic growth, these initiatives seek to lessen the adverse effects of water overuse (Kapoor, 2020).

Political liberalization and decentralization in Nepal in the 1990s brought in new actors, such as community organizations and the business sector, and encouraged demand-driven, community-based participatory techniques (Government of Nepal, 2014). The government's implementation of the participatory method in drinking water and sanitation projects, from problem identification to benefit sharing, hastened project building and expanded access. With the restoration of democracy, the Nepalese people's attitude toward clean water and sanitary facilities changed from dependence to ownership (Salam et al., 2017; Nepal et al., 2019).

Local communities are now empowered to take leadership of project implementation with government support in Nepal thanks to organizational changes made to the country's drinking water and sanitation sector (Dahal et al., 2019). With the help of functional systems, this concerted effort resulted in substantial advancements

that increased water supply coverage from 40% in the early years of multi-party democracy to almost 85% presently (Government of Nepal, 2016b; Budhathoki, 2019). Universal access to water and sanitation is a key component of the United Nations Sustainable Development Goal 6 (Gurung et al., 2019).

The need for comprehensive infrastructure development that addresses regulatory, legal, institutional, administrative, technological, financial, and political issues is still present, nonetheless, according to Tortajada (2016). These issues make governance in this field a critical global issue that necessitates collaboration and cooperation as these issues hinder access to drinking water and sanitary facilities (White & Haapala, 2018).

Sustainable Development Goal 6, which aims to ensure water availability and sustainable management while eliminating open defecation by 2030 (WHO, 2019), is an example of how important access to clean water and sanitation is globally. Despite this, only 51.69% of the population in Nepal has access to piped water, creating serious problems for both drinking water and sanitation (DWSSM, 2019). Despite advancements, over a 20-year period, the percentage of securely managed enhanced water supply sources has dropped from 24% to 18% (JMP 2021; Sharma et al., 2021). However, some news articles have been frequently coming on drinking water scarcity.

The lack of easy access to potable water in areas like as wards No. 3 and 4 of Chaubise Rural Municipality, Dhankuta district, has accelerated the Tamang community's migration patterns (Adhikari, 2020). But the underlying factors that drive movement in this region—namely, the lack of access to clean drinking water services—have not been studied. In order to better understand the factors that influence migration patterns in Chaubise rural municipality in Dhankuta district. So, this study was concentrated on the crucial relationship that exists between population movement and the scarcity of drinking water. Though there is not constant discussion about the relationship between migration and water scarcity. This disparity highlights the necessity for thorough attention to the relationship between migration and the lack of drinking water, an issue that the government has not given enough thought to despite its frequent association in academic discourse.

## Objectives

1. to investigate the primary drivers of migration in the study area.
2. to analyze the intricate relationship between access to drinking water and migration in this context.

This introduction sets the stage for a comprehensive examination of the complex interplay between migration, water access, and the challenges and opportunities faced in the pursuit of universal drinking water and sanitation services.

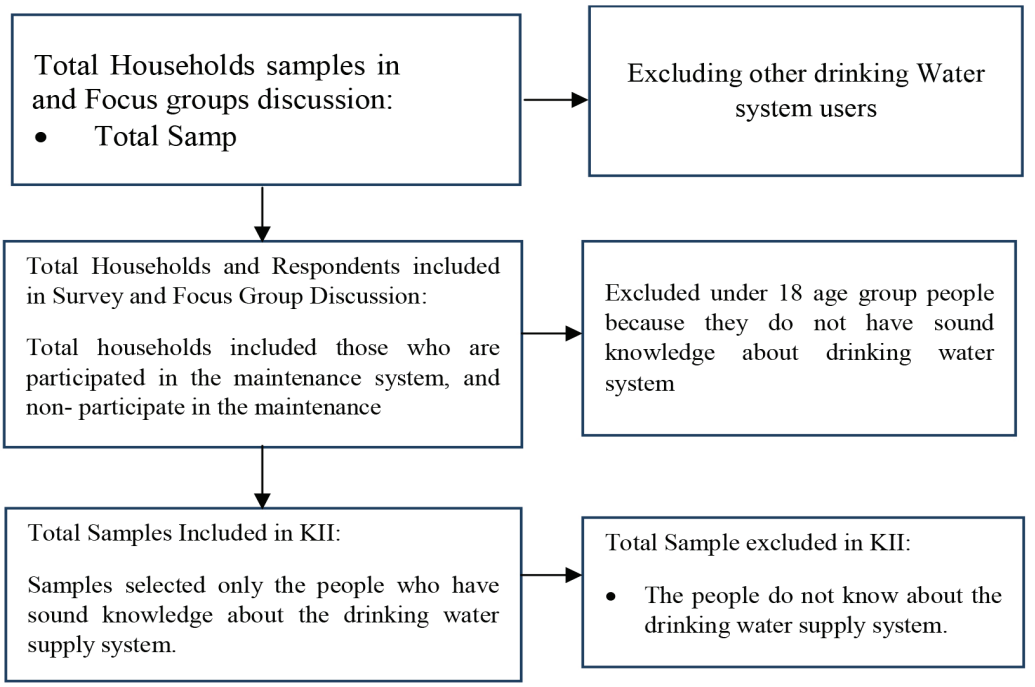
## Literature Review

Choosing relevant keywords and search terms linked to water scarcity, forced migration, Chaubise Rural Municipality, and Dhankuta District was the first step in the literature search process for this study. The primary research tool used was Google Scholar, with searches like "water scarcity and forced migration in Chaubise Rural Municipality Dhankuta." The relevance of the titles and abstracts in the search results was thoroughly examined. When it was necessary, the search criteria were adjusted, and full-text access to pertinent journals and papers was obtained. Additional relevant literature was located by looking up citation chains, and sources were meticulously stored and arranged for further use. Continuous searches and alerts were put up to ensure currency, and academic databases, government/NGO papers, and other sources were also explored to fully address the research.

## Methods

In this work, a precise quantitative research methodology has been used to examine the complex relationship between water scarcity and forced migration in the particular setting of Chaubise Rural Municipality Ward No. 3 and 4, Dhankuta District. To systematically gather data from the study population, a standardized questionnaire was delivered through interviews using a random sample technique. The Statistical Package for the Social Sciences (SPSS) software was used to carefully analyze the acquired data, including data cleaning, descriptive statistics, and inferential analysis. This methodological approach enables the systematic exploration of key migration drivers and the complex interaction between migration patterns and access to potable water, providing a solid framework for deriving insightful knowledge about the dynamics of forced migration brought on by water scarcity. To gain a thorough grasp of the research field, qualitative data were acquired through five in-depth key informant interviews (KII) and two focus group discussions. Focus group discussions provided insights into group dynamics, whereas KII offered a thorough examination of individual viewpoints. Atlas.ti software was used for data analysis, enabling a methodical and thorough examination of the qualitative data and guaranteeing that complex patterns and insights could be drawn from the conversations and interviews.The researcher delivered 304 structured questionnaires to respondents in the study area as part of this research's sequential exploratory technique to gather primary quantitative data on November 20, 2077 BS. Then, on September 2, 2078 BS, three focus group talks were conducted with various sets of participants who identified as being male, female,

or mixed-gender. To improve the qualitative dataset, ten key informant interviews were also done. While simple random sampling was used to gather quantitative data, stratified, purposive, and snowball sampling techniques were used to choose critical informants and focus group members. Research methodology is reflected from figure No: 1




## Theoretical Framework

The Push-Pull theory describes how push forces push individuals away from their places of origin, and pull factors, which draw them to destinations, interact to determine migration patterns. It is a fundamental theoretical framework for understanding migration dynamics. According to this theoretical framework, the pull factors are the attraction and opportunities provided by the destination, whereas the push forces are a variety of unfavorable circumstances or limitations in the home location. Economic troubles, political unrest, war, natural disasters, and a lack of essential amenities are frequently cited as push factors. These bad conditions frequently push people or communities to look for better opportunities elsewhere. Economic push factors, such as stagnated salaries, high unemployment opportunity rates, or restricted access to healthcare and education, may encourage people to consider migration as a way to increase their economic well-being. These push and pull forces interact dynamically to affect the choice to migrate. Additionally, a person's decision to immigrate is influenced

by personal qualities, sociocultural influences, and policy situations. Insights into the intricate decision-making processes that underpin migration patterns can be gained by understanding the relative importance of push and pull variables as well as the manner in which they overlap. Researchers are encouraged by this theoretical framework to investigate how particular push and pull factors materialize in various settings, how they change over time, and how they interact to affect migration. It emphasizes the necessity of a complex, multifaceted explanation of migration dynamics that takes into account both the structural causes that propel migration and the decision-making processes at the human level. Scholars can get a thorough understanding of migration in many geographic locations by using the Push-Pull Theory as a theoretical lens. They can also provide insightful knowledge to the creation of immigration-related policies and social interventions. Hence, the researcher used Push-pull Theory as a theoretical lens for this study because the researcher's main purpose of the study is to find out the dominant cause of migration in the study area.

## Results and Discussion

In lance with the push-pull theory of migration, the goal of this study was to identify the underlying factors influencing migration trends in the studied area. Our findings demonstrate the intricate interaction of factors affecting migration choices. On the one hand, push factors like unstable economic conditions and a lack of work opportunities operate as strong incentives for people to look for other places. On the other side, immigration to the area is influenced by pull factors, such as access to better education and higher living standards. These findings highlight the complex elements that influence migration choices and the demand for nuanced policy responses that handle both push and pull effects. The researcher has explained the main push and pull factors in this section.

**Table 1**

*Socio-Demographic Characteristics of Study Area*

| **Caste/Ethnicity** | **Respondents** | **Percentage** |
|---|---|---|
| Brain/ Chhetri | 120 | 40 |
| Janajati | 156 | 51 |
| Dalit | 28 | 9 |
| **Total** | **304** | **100** |

Field Survey, 2078

In the research area, demographic composition, particularly ethnic distribution, is critical to understanding the complicated interplay between drinking water access and migration. The Janajati group accounts for the bulk of responders (51%), with subgroups including Magar, Limbu, Dewan, Yakha, and Tamang showing a mixed population. The second-largest group is Brahmin/Chhetri (40%), followed by Dalits (9%). Disparities in drinking water availability between ethnic groups must be explored to discover if particular populations have higher obstacles in acquiring clean and safe drinking water. Furthermore, infrastructure, cultural customs, and social conventions within different ethnic groups might have an impact on water access. In terms of migration, it is critical to examine the drivers, destinations, and duration for each group, with a particular focus on whether water-related issues contribute to movement.

**Respondents of Permanent Migration**

The second goal of this research is to determine the current out-migration trend in the study area. This goal stems from specific research reports stating that individuals were forced to migrate from the study area due to a lack of drinking water resources. As a result, to adequately address this second study's purpose, it is critical to collect relevant information about migration patterns and trends. To do this, respondents were asked questions to examine their views, and their responses were divided into two categories: "Yes" and "No." Table 2 elaborates those responses on permanent migration which is a critical tool for evaluating and understanding the migration dynamics in the study area.

**Table 2**

*Respondents of Permanent Migration.*

| Responses | Frequency | Percentage |
|---|---|---|
| No | 5 | 1.6 |
| Yes | 299 | 98.4 |
| **Total** | **304** | **100** |

*Source*: Field Survey, 2078

The investigation of migratory trends in the research area, as shown in Table No: 2 reveals an interesting pattern. A significant proportion of 299 respondents (98.4%) answered affirmatively with a "YES" to the question on migration, while a minor fraction of five respondents (1.6%) answered negatively with a "NO." These

quantitative findings strongly imply a widespread tendency of permanent emigration from the study area. The researcher conducted three focus group discussions (FGDs) and six Key Informant Interviews (KIIs) in the field to validate and supplement these quantitative findings. These extra-qualitative data collection approaches revealed new aspects of the migratory problem. According to the data, ten households have permanently migrated from Bhadaure, fourteen households from Andheri, twenty-five households from Tenupa, twenty-two households from Khani Gaun, three households from Bhujel Gaun, and six households from Bista Gaun. Furthermore, it was discovered that this movement trend is currently affecting eight homes in Khani Gaun and nine households in Bhadaure. The convergence of quantitative and qualitative data supports the conclusion that the research area is witnessing a significant and confirmed permanent migration trend, confirming this phenomenon's multidimensional nature.

**Causes of Permanent Migration**

The researcher conducted field trips to fully grasp migratory trends in the study area. Recognizing that various circumstances influence migration, the researcher took on the essential task of developing indicators to adequately quantify and assess the complexities of migration. Following that, a painstakingly crafted researcher-created questionnaire with various multiple-response alternatives was used to collect data. The result of these efforts is shown in Table 3, which serves as a valuable tool for methodically defining the various causes and reasons that reinforce migratory trends. This methodological technique demonstrates the researcher's dedication to capturing the nuanced intricacies of migration within the study environment, opening the way for a rigorous analysis.

**Table 3**

*Causes of Permanent Migration*

| Causes of migration | Frequency | Percent |
|---|---|---|
| Wild animals trouble | 16 | 5.3 |
| Better Facilities | 43 | 14.1 |
| Employment Opportunities | 90 | 29.6 |
| Economic Growth | 115 | 37.8 |
| Drinking-Water Crisis | 40 | 13.2 |
| **Total** | **304** | **100.0** |

*Source:* Field Survey, 2078

A complete assessment of the range of causes of permanent migration in the research area found several critical factors, each with a particular weight in determining migration patterns. Among these, economic growth appears as the most powerful motivator, with a significant 37.8% of respondents naming it as the critical reason for migration. Employment possibilities were recognized as the second most important contributing factor. Further research reveals that greater amenities influence migration decisions to a minor level. On the other hand, water scarcity and animal-related difficulties were identified as relatively modest drivers for permanent migration. Now, there is given collaborative efforts of international and national stakeholders add a fascinating dimension to this area. These initiatives play an important role in providing access to clean and safe drinking water. However, it is worth noting that a sizable proportion, 13.2% of respondents, still identified a lack of drinking water access as a contributing cause to relocation within the research area. Additional qualitative data was acquired through focus group discussions (FGDs) and Key Informant Interviews (KIIs) to supplement this perspective. These additional findings highlight the critical impact of insufficient drinking water access in affecting migration decisions. These interviews' narratives offered a vivid picture of the real-life repercussions of water scarcity, showing sad stories of people forced to make life-altering decisions due to the water crisis.

These accounts, such as the distressing incident in Banduke Danda and Bhadaure, where people slept without eating food, and the moving story of a young man's migration due to a lack of access to drinking water, serve as compelling examples of how a lack of drinking water can lead to permanent migration. Furthermore, a delegation of homes issued an ultimatum to the ward chairperson, indicating their intention to migrate if water access was not resolved, emphasizing the urgency and relevance of this issue.

In conclusion, this data not only reinforces the importance of economic growth as a primary driver of migration but also highlights the long-term impact of drinking water scarcity in driving people and households to make the difficult decision to migrate permanently. It emphasizes the complex interplay of socioeconomic conditions and access to critical resources in affecting migration dynamics in the research area.

**Table 4**

*Main Causes of Water Crisis Respondents*

| Causes of Water Crisis | Frequency | Percentage |
|---|---|---|
| Political Biases | 20 | 6.5 |
| Lack Awareness | 5 | 1.5 |
| Lack of Sources | 13 | 4.5 |
| Enough Access to Water Sources in the Past | 266 | 87.5 |
| **Total** | **304** | **100.0** |

*Source*: Field Survey, 2078

This research delves into a comprehensive exploration of the persistent challenge of limited drinking water access in the study area, extending from international aspirations such as the Millennium Development Goals and Sustainable Development Goals to the specific targets set by the Nepal government. These collective frameworks passionately argue for the equal availability of safe, drinkable water to all inhabitants. However, the stark fact remains: Why are some members of the study area's population still without this vital resource? The researcher started on a methodologically diversified trip to uncover the core causes, employing deductive and inductive methodologies and a harmonious blend of qualitative and quantitative research methods.

The first round of data collecting entailed providing four separate possibilities to respondents, each reflecting a probable reason for the existing lack of drinking water access. Surprisingly, a large majority of 226 respondents (87.5%) agreed that the critical factor was the abundance of accessible water sources in the past. This overwhelming agreement served as the basis for the researcher's conclusion that the current lack of drinking water availability was traced back to the mistaken idea that sufficient water sources were once widely available.

The researcher did additional fieldwork, participating in five Key Informant Interviews (KIIs) and three focus group discussions (FGDs) to support and validate this result. Participants were asked to explain the reasons for the existing water access difficulties during these interactive sessions. Their testimonies offered a vivid image of the past, approximately 2041 BS, when water sources were plentiful, contributing to community residents' reluctance to pay monthly water taxes or use pipeline drinking water. The landscape has changed dramatically, and many of these water sources

have vanished. While some resurfaced after heavy rains, the overall trend indicated decreased water availability. The allegation that "maximum water sources were available in Kurule Tenupa in the past" is a moving testimony.

Furthermore, the researcher investigated community members' willingness to switch to pipeline water access. A narrative featuring fictitious names, Hari Bahadur and Syam Bahadur, was shared to demonstrate the fluid nature of water access. Hari Bahadur initially supported the pipeline water supply but later sold his tap to Syam Bahadur, resulting in access discrepancies. It is critical to emphasize that the names used here are pseudonyms to shield persons' identities for ethical reasons. This study offers insight into the complex interplay of historical perspectives, changing water availability, and individual decisions as essential causes of the study area's current drinking water access difficulties.

## Conclusion

Kurile, Tenupa was a village development committee in the Past. Now, It is under Chaubise Rural Municipality wards no: 3 and 4. Magar, Yakha, Dewan, Tamang, Limbu, Rai Sarki, Damai, Kami Chhetri, and Bramin People live there.. Nepal's government established a pipeline drinking water system in 2041 BS by applying a top-down development approach. At that time there were enough water sources. The government water system could not provide easy access to drinking water than other drinking water sources. Many water sources were available in most parts of Kurule Tenupa village. So, community people were not ready to take the pipeline drinking water system. They thought paying the levy was a burden because the pipeline water source was very far from the village. So community people kept staff for water supply maintenance. Due to this, they should pay water levy. Next, the pipeline drinking water systems did not supply water regularly in the rainy season. Now, there are four staff for water supply maintenance. At that time, 150 households gathered at the single well and a whole day to collect a single put of water. Due to a lack of readiness to take the pipeline drinking water system in the past, most people are out of drinking water access now. As a result, ten households migrated from Bhadaure, and some households from Khani Gaun, and Tenupa. Hence, the researcher claimed that one of the dominant causes of drinking water inaccessibility is enough availability of drinking water access in the Past. The structure is limited for specific households because of the unwillingness to take drinking water from pipeline drinking water systems. Now, the drinking water users committee has expanded the number of drinking water taps as much as possible to provide water access to community people.

However, they are unable to provide drinking water for all community people. Twenty-five households in Bhaise and three households in Dihitar still do not have

pipeline drinking water access. However, 25 households in Bakhere Khola have a single drinking water tap. Similarly, nine households use the single tap in Bhadaure. Bista Gaun and Bhujel Gaun people also use single tap. Nevertheless, the drinking water supply system supplies water for one hour to two hours but, it is not regular. It is not drinkable. Due to this local government should give the first on drinking water in this area.

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