

## **Drinking Water Scarcity in Communities of Surkhet District**

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### **Abstract**

*Access to drinking water is a fundamental necessity for health, well-being, and daily household functioning. This study examined the extent of drinking water shortages and identify the key factors contributing to the scarcity in the area. Employing a quantitative descriptive design with quasi-experimental elements, the study collected primary data from 110 households dependent on tap water supplied by the municipality. Secondary sources, including district profiles, previous research reports, journals, and online publications, were also utilized to provide contextual information. Ethical considerations were strictly maintained throughout the research process. Informed consent was obtained from all respondents prior to data collection, participation was entirely voluntary, and respondents were assured of confidentiality and anonymity. The collected data were used solely for academic purposes. The findings reveal that the majority of households did not experience frequent or severe water shortages, long waiting times, or daily disruptions, and most respondents believed that the existing water system adequately met household needs. However, more than half of the respondents reported reduced water supply during the dry season, indicating seasonal vulnerability. Water scarcity occasionally affected household activities, with causes identified as poor management, population growth, climate change, and infrastructural issues. Households relied on wells, tanker water, or neighbors during shortages and suggested solutions including new water sources, maintenance, rainwater harvesting, and community cooperation. Notably, over half of the respondents expressed willingness to pay higher fees for continuous and safe water supply. The study concludes that while water scarcity in the study area is not severe year-round, targeted improvements in management, infrastructure, and seasonal planning are necessary to ensure sustainable access to drinking water.*

**Keywords:** Drinking water, Water scarcity, Household survey, Seasonal shortage, Water supply infrastructure, Tap water dependency

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### **Introduction**

Water is an essential resource for life, playing a critical role in maintaining human health and supporting economic and social development. Yet, access to sufficient drinking water is becoming an increasing global concern, affecting billions of people worldwide. Drinking water scarcity occurs when safe and adequate water for human consumption is unavailable or difficult to access. This problem is driven by multiple factors, including climate change, population growth, ineffective water management, pollution, and inadequate infrastructure. Tackling water scarcity is vital for ensuring public health, sustainable development, and overall societal well-being. This paper examines the definition, causes, global and Nepalese context of water scarcity, and potential strategies to address it (UN-Water, 2024).

The consequences of water scarcity extend beyond drinking purposes, impacting agriculture, industry, energy production, and ecosystems. Limited access to clean water also exacerbates health challenges, contributing to the spread of waterborne diseases such as cholera and dysentery. Social and economic inequalities are often heightened as vulnerable communities face the

greatest difficulties in obtaining potable water. Water scarcity arises either when freshwater demand surpasses available supply or when water quality is insufficient. According to the United Nations, water scarcity occurs when the cumulative demands of all water users exceed the available supply, preventing the needs of people and the environment from being met under current institutional conditions. Water scarcity can be divided into two types: physical and economic. Physical water scarcity occurs in naturally dry or drought-prone regions, while economic water scarcity results from inadequate infrastructure or poor water management that restricts access to existing water resources (World Bank, 2023).

Globally, water scarcity affects nearly one-third of the population. The World Health Organization estimates that 2 billion people do not have access to safely managed drinking water, and about 3.6 billion experience water shortages for at least one month each year (WHO, 2024). Areas most affected include sub-Saharan Africa, South Asia, and the Middle East. In sub-Saharan Africa, 400 million people lack safe drinking water, contributing to high rates of preventable illnesses (UNICEF, 2023). India faces severe groundwater depletion, with over 21 cities projected to exhaust their groundwater by 2030 (NITI Aayog, 2023). In the Middle East, arid climates, limited freshwater, rapid urbanization, and regional conflicts exacerbate water scarcity.

The social implications of water scarcity are also profound. Women and girls, who are often responsible for collecting water, spend long hours fetching it, which limits their opportunities for education and employment. In areas facing severe shortages, community tensions and disputes over water resources may arise, sometimes leading to migration. Economically, inadequate water supply affects both agriculture and industry. In Nepal, where over 65 percent of the population depends on agriculture, reliable water sources are essential for food security and livelihoods (FAO, 2023).

Addressing drinking water scarcity requires a multi-faceted approach, combining policy reform, technological solutions, and community engagement. Sustainable water management practices, such as improved irrigation systems, rainwater harvesting, and watershed conservation, are essential. Government investment in infrastructure is crucial to ensure equitable access to safe water, with projects like the Melamchi Water Supply Project aiming to improve urban water supply, though similar efforts are needed in rural areas. Technological innovations, including desalination, wastewater treatment, and smart water management systems, can further enhance water security. Countries like Israel demonstrate the effectiveness of desalination projects in supplementing freshwater resources (Israel Water Authority, 2023).

In conclusion, drinking water scarcity remains a pressing issue in Nepal, with significant health, social, and economic consequences. Despite the country's abundant natural water resources, pollution, climate change, and infrastructure gaps hinder access to clean water. A combination of government policies, technological advancements, and active community participation is necessary to address this challenge. Educating communities on water conservation, hygiene, and sanitation practices is also critical to reduce wastage and contamination. Initiatives led by organizations such as WaterAid Nepal provide examples of successful community-based approaches to improving water access and promoting sustainable water management (WaterAid, 2023).

### **Objectives**

The main objective of this study was to examine the issue of drinkable water scarcity in Birendranagar, Surkhet, and to identify the key factors contributing to the shortage of safe and adequate drinking water in the area.

### **Literature Review**

Gurung (2019) examined water crises in Nepal's mid-hills through qualitative case studies in rural watersheds. The study found that rural communities face unreliable water supply, with 20–25 percent of water resources having dried up over the past two decades. Women and girls are disproportionately affected, as they are primarily responsible for fetching water. Low-income households face greater burdens, often traveling long distances to access water. The study highlights the need for effective coping strategies to ensure safe and sufficient water access in these communities.

Pradhan (2021) reviewed the status of drinking water in Nepal in the context of climate change. Despite progress in water supply over recent decades, climate impacts on water access remain poorly documented. The study emphasizes that while policies exist, few prioritize climate-resilient water, sanitation, and hygiene (WASH) interventions. Action-based research and region-specific strategies are needed to mitigate the effects of climate change on water resources.

Khanal (2023) studied rainwater harvesting (RWH) in Kathmandu Valley, focusing on awareness, challenges, and implementation. Using surveys of 403 households, the study found that RWH users are more aware of water and climate change issues than non-users. Respondents identified water scarcity, user commitment, and cost-effective technology as key factors in overcoming RWH challenges. The study suggests multi-stakeholder collaboration, including government, NGOs, and the private sector, to promote sustainable urban water management through RWH systems.

Dhital (2020) investigated water collection practices in remote mountainous villages of Nepal. Households often rely on one or two members for water collection, visiting multiple sources 3–4 times daily, averaging nearly 2.5 hours per day. Factors influencing collection time include household size, education, and gender distribution. Access to water storage reduces collection time. The study highlights the significant burden of water collection and the need for infrastructure improvements to achieve sustainable access to water in line with development goals.

Poudel and Shaw (2025) conducted a study entitled “Exploring household resilience indicators in the context of urban–rural linked water systems and post-disaster scenarios in Kathmandu Valley.” The main objective of the study was to identify key household-level resilience indicators that help communities cope with disasters and support urban–rural linked water systems, as well as to assess household conditions in both water demand and supply zones. The methodology employed a mixed-methods approach, including focus group discussions with four groups and household surveys of 438 respondents from urban, peri-urban (Kathmandu Valley), and rural (Melamchi) areas, organized into eight clusters. The main findings revealed 31 household resilience indicators under the PEISE framework (physical, economic, institutional, social, and environmental) that are affected in post-disaster contexts. Critical issues included reduced water availability in urban

areas affecting revenue collection and flood-induced damage and displacement in rural supply areas leading to labor shortages. The study concluded that rural areas represent low-resilience zones and emphasized the need for benefit-sharing mechanisms, such as water benefit-sharing and payment for ecosystem services (PES), to strengthen household resilience and sustain urban–rural water systems.

Parajuli et al. (2025) conducted a study entitled “Perceived adverse impacts undermine socio-economic benefits of resin tapping to the rural livelihood in far-western Nepal. The main objective of the study was to examine the perceived social, economic, and environmental impacts of resin tapping from Chirpine (*Pinus roxburghii*) forests on rural livelihoods and socio-ecological dynamics in Nepal’s mid-hills. The methodology involved a household survey of 302 forest users from 20 community forest user groups across three far-western districts, analyzed using a structural equation modeling (SEM) approach. The main findings indicated that while resin tapping contributes positively to local employment and community development, respondents also reported significant negative environmental impacts, including increased fire risk, water scarcity, and higher pine tree mortality. Socio-demographic factors influenced perceptions, with wealthier and male respondents less likely to acknowledge negative impacts. The study concluded that understanding diverse community perceptions is essential for balancing livelihood benefits with environmental sustainability and ensuring long-term resilience of Chirpine-based human–nature interactions.

Poudel and Shaw (2025) conducted a study entitled “Challenges of Urban Water Security and Drivers of Water Scarcity in Kathmandu Valley, Nepal.” The main objective of the study was to assess the current status of water resources in the Kathmandu Valley and identify the key drivers contributing to urban water scarcity. The methodology adopted qualitative research techniques, including observation, interviews, and secondary data analysis, with findings analyzed using the three pillars of Urban Water Security (water resource security, water environment security, and water disaster security). The main findings showed that all three pillars of urban water security in the Kathmandu Valley are significantly weakened due to interconnected issues of water quantity and quality. The study identified pollution, urbanization, management, and investment as the root causes of water insecurity, forming a new analytical framework known as PUMI. The study concluded that ineffective governance, donor-driven investments, inadequate regulation, and poor management practices are central challenges that must be addressed to improve urban water security in Kathmandu Valley.

The reviewed studies offer important insights into drinking water scarcity in Nepal across rural, urban, climatic, and livelihood contexts. However, a clear research gap exists regarding community-level drinking water scarcity in semi-urban and emerging urban areas such as Surkhet District. Most existing research focuses on remote rural regions, major urban centers like Kathmandu Valley, or broader thematic issues, leaving Surkhet’s localized conditions largely unexplored. In particular, household experiences, coping strategies, user satisfaction, and the performance of local water supply institutions in Surkhet have received limited attention. Therefore, an empirical community-based study is needed to examine the extent, causes, and impacts of drinking water scarcity in Surkhet District and to support context-specific water management interventions.

### **Methodology**

A quantitative descriptive design was primarily adopted to assess the extent and contributing factors of water scarcity. In addition, quasi-experimental elements were incorporated to compare conditions before and after specific observations within the community. Primary data were collected directly from households experiencing drinking water scarcity, specifically those dependent on tap water supplied by the municipality. A structured questionnaire served as the main research tool, designed according to the study objectives. The questionnaire included multiple sections related to water availability, household water usage patterns, and perceived challenges. Prior to the main survey, a pilot test was conducted among 20 households in the study area, each having at least one child. Feedback obtained from the pilot test and the supervisor was used to revise and finalize the questionnaire to ensure clarity, reliability, and validity.

The study population consisted of all households affected by drinking water shortages in the study area. From this population, a total of 110 households were selected using a simple random sampling strategy to ensure equal representation. A sample of 110 households was selected to obtain a manageable yet statistically adequate representation of households affected by drinking water shortages. Simple random sampling ensured equal chance of selection and enhanced the reliability and generalizability of the findings. Secondary data were collected from district profiles, local newspapers, previous research reports, journals, online publications, and other relevant documents.

Data collection procedures involved the researcher visited the study site, identified eligible households, and conducted face-to-face interviews. Ethical considerations, including informed consent, voluntary participation, confidentiality, and respect for respondents' privacy, were strictly maintained. Completed questionnaires were kept confidential and used solely for academic purposes.

Data analysis included checking and organizing the collected information, tabulating responses in a master sheet, and classifying data under relevant headings and subheadings. Descriptive statistical tools such as percentages, frequencies, and mean values were employed to interpret the findings. The analyzed data were then compared with national and international studies to draw meaningful conclusions about drinkable water scarcity.

#### **Delimitations of the Study**

Due to time, financial, and resource constraints, this study is limited to 110 households situated in ward no. 1, Birendranagar, Surkhet, and therefore may not fully represent drinking water scarcity conditions in other areas of the municipality or district. The research focuses on a sample of 110 households dependent on tap water supplied by the municipality to assess the extent and nature of drinkable water shortages in the community. The study relied primarily on self-reported data from households, which may be subject to recall bias or social desirability bias. Data collection focused only on tap water-dependent households, potentially excluding experiences of households using alternative water sources. The cross-sectional nature of the survey limits the ability to establish causal relationships between contributing factors and water scarcity outcomes.

### **Results**

#### **Water Scarcity Experiences**

Water scarcity experiences refer to households' perception of shortage, frequency, waiting time, and seasonal variation in water supply. These indicators reflect the adequacy and reliability of the municipal water system.

Table 1: *Distribution of Respondents by Water Scarcity Experiences*

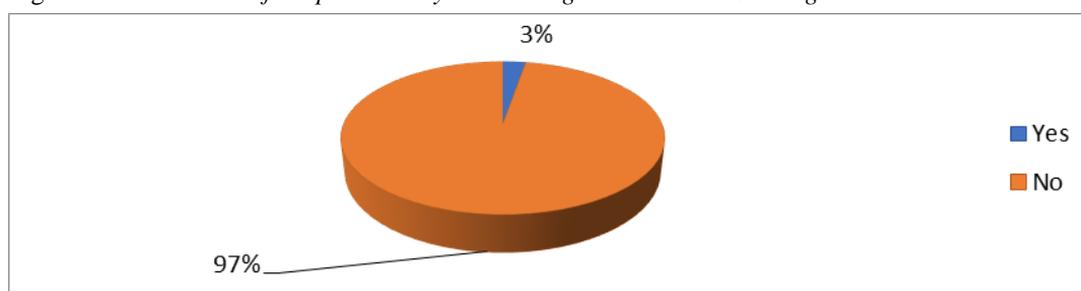
Question / Indicator	Yes	Percent	No	Percent
Experience shortage of drinking water in household	25	22.73	85	77.27
Water scarcity is a frequent problem in the area	20	18.18	90	81.82
Have to wait long hours for water supply	15	13.64	95	86.36
Water supply decreases during dry season	60	54.55	50	45.45

Source: Field Survey, 2025

Table presents that most respondents did not experience regular water shortages (78 percent) or long waiting times (86 percent), and water scarcity was not frequent for the majority (82 percent). However, more than half (55 percent) reported that water supply decreases during the dry season, indicating that seasonal factors significantly affect water availability in the study area. It is concluded that while daily supply is generally adequate, households are vulnerable to reduced supply during the dry season.

#### **Purchasing Water Due to Shortage**

Purchasing water due to shortage refers to whether households have to buy drinking water when the municipal supply is insufficient. This reflects the severity of water scarcity and households' coping strategies. The distribution of respondents by experience of purchasing water and type of water purchased has been shown in the following pie-chart:

Figure 1: *Distribution of Respondents by Purchasing Water Due to Shortage*

Source: Field Survey, 2025

Above figure presents that only a very small proportion (3 respondents, 3 percent) purchased water due to shortage, whereas the overwhelming majority (97 percent) did not. Among those who purchased water, one respondent bought bottled water, one used jar water, and one relied on a water tanker. It is concluded that most households in the study area do not need to purchase water, indicating that municipal supply generally meets their needs, with only a very few facing scarcities.

#### **Adequacy of Current Water System**

Adequacy of the water system refers to whether households believe that the existing municipal water supply meets their daily water requirements. This reflects the effectiveness and reliability of the water distribution system. The distribution of respondents by perception of adequacy has been shown in the following table.

Table 2: *Distribution of Respondents by Adequacy of Current Water System*

Response	No. of Respondents	Percent
Yes	90	81.82
No	20	18.18
Total	110	100.00

Source: Field Survey, 2025

Table 2 presents that the majority of respondents (82 percent) believed that the current water system could meet their household needs, whereas 18 percent felt it was inadequate. It is concluded that most households were satisfied with the adequacy of the water supply, although a minority experienced limitations, indicating areas for potential improvement.

#### **Complaints to Authority About Water Scarcity**

Complaints to the authority refer to whether households have reported issues of water scarcity to the responsible municipal or local bodies and the response received. This reflects community engagement and the effectiveness of the water management system. The table below shows how respondents are distributed in terms of complaints lodged and responses received.

Table 3: *Distribution of Respondents by Complaints to Authority About Water Scarcity*

Response / Authority Action	No. of Respondents	Percent
Complained (Yes)	15	13.64
Did not complain (No)	95	86.36
Total	110	100.00

Source: Field Survey, 2025

Table 3 presents that only a small proportion of respondents (14 percent) had complained to the authority regarding water scarcity, while the majority (86 percent) did not. Among those who complained, 3 respondents reported the problem was solved quickly, 7 were promised action but the issue was not resolved, 4 received no response, and 1 did not know the outcome. It is concluded that few households actively engaged with authorities regarding water scarcity, and responses from authorities were largely inadequate or delayed.

#### **Impact of Water Scarcity on Daily Activities**

Impact of water scarcity refers to whether households feel that insufficient water supply has disrupted their routine activities, such as cooking, cleaning, and personal hygiene. This reflects the practical consequences of water scarcity on daily life. The distribution of respondents by perceived impact has been shown in the following table.

Table 4: *Distribution of Respondents by Impact of Water Scarcity on Daily Activities*

Response	No. of Respondents	Percent
Yes	25	22.73
No	85	77.27
Total	110	100.00

Source: Field Survey, 2025

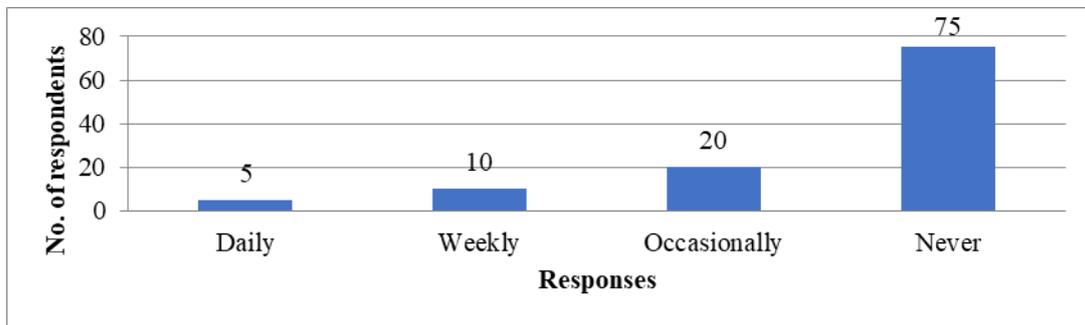
Table 4 presents that nearly one-fourth (23 percent) of respondents reported that water scarcity affected their daily activities, whereas the majority (77 percent) did not perceive any significant impact. It is concluded that while most households were able to manage their daily routines without

major disruption, a notable minority faced challenges due to water shortages, highlighting localized effects of scarcity.

**Frequency of Facing Water Shortage**

Frequency of facing water shortage refers to how often households experience insufficient water supply from the municipal system. This reflects the reliability of the water supply and the degree of scarcity experienced by residents. The distribution of respondents by frequency of water shortage has been shown in the following figure.

Figure 2: *Distribution of Respondents by Frequency of Facing Water Shortage*



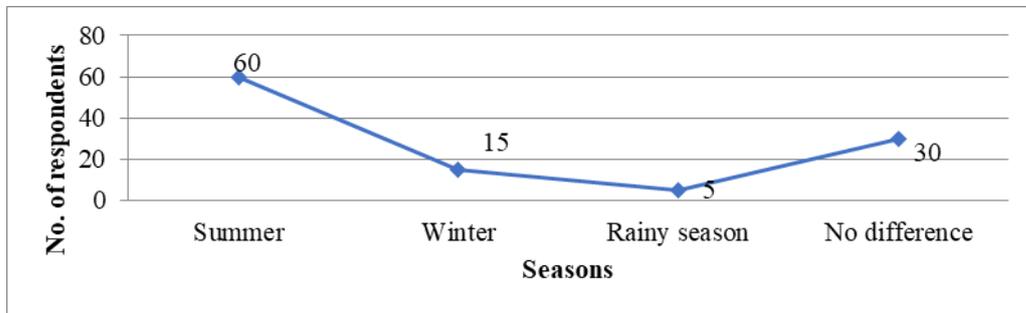
Source: Field Survey, 2025

Above figure presents that the majority of respondents (68 percent) never faced water shortage, while 18 percent experienced it occasionally. A smaller proportion reported weekly shortages (9 percent) and daily shortages (5 percent). It is concluded that water shortage is not a frequent problem for most households, though a minority experiences intermittent or frequent scarcity, indicating localized gaps in supply.

**Seasonal Severity of Water Scarcity**

Seasonal severity of water scarcity refers to the time of year when households experience the most acute shortage of water. This helps identify periods of vulnerability and plan for seasonal water management strategies. The distribution of respondents by season of water scarcity has been shown in the following figure.

Figure 3: *Distribution of Respondents by Season of Severe Water Scarcity*



Source: Field Survey, 2025

Above figure presents that more than half (55 percent) of respondents reported that water scarcity is most severe during the summer season, followed by 27 percent who did not perceive any seasonal difference. A smaller proportion experienced severe scarcity in winter (14 percent) and the rainy season (5 percent). It is concluded that summer is the period of highest vulnerability to water scarcity in the study area, indicating the need for targeted water management during dry months.

#### **Duration of Managing with Stored Water During Scarcity**

Duration of managing with stored water refers to how long households can sustain their daily water needs using the water stored at home when municipal supply is insufficient. This reflects household preparedness and storage capacity during water shortages. The following table illustrates the distribution of respondents according to the duration they can use stored water.

Table 5: *Distribution of Respondents by Duration of Managing with Stored Water*

<b>Duration of Stored Water</b>	<b>No. of Respondents</b>	<b>Percent</b>
Less than one day	20	18.18
1–2 days	50	45.45
3–4 days	30	27.27
More than 4 days	10	9.09
Total	110	100.00

Source: Field Survey, 2025

Table 5 presents that nearly half (45 percent) of respondents could manage for 1–2 days with the water stored at home during scarcity, followed by 27 percent who could manage 3–4 days. About 18 percent could manage less than one day, and 9 percent more than 4 days. It is concluded that most households could cope with short-term water shortages for 1–2 days, but longer-term shortages would require additional supply or alternative arrangements.

#### **Main Cause of Water Scarcity**

The main cause of water scarcity refers to respondents' perception of the primary factors contributing to insufficient water supply in their area. This helps identify key issues that need to be addressed to improve water availability. The distribution of respondents by perceived causes of water scarcity has been shown in the following table.

Table 6: *Distribution of Respondents by Main Cause of Water Scarcity*

<b>Cause of Water Scarcity</b>	<b>No. of Respondents</b>	<b>Percent</b>
Population growth	30	27.27
Poor management	40	36.36
Climate change	25	22.73
Leakage or damage	15	13.64
Total	110	100.00

Source: Field Survey, 2025

Table 6 presents that the majority of respondents (36 percent) perceived poor management as the main cause of water scarcity, followed by population growth (27 percent) and climate change (23 percent). A smaller proportion (14 percent) identified leakage or damage as the main cause. It is

concluded that water scarcity in the study area is primarily attributed to poor management and increasing demand, highlighting the need for improved water governance and infrastructure maintenance.

### Sources of Water During Scarcity

Sources of water during scarcity refer to alternative options households rely on when municipal supply is insufficient. This indicates coping strategies and the availability of backup water sources in the community. The table below shows how respondents are distributed in terms of the water sources they rely on during scarcity.

Table 7: *Distribution of Respondents by Source of Water During Scarcity*

Source of Water	No. of Respondents	Percent
Neighbors	15	13.64
Wells	70	63.64
Tanker water	25	22.73
Total	110	100.00

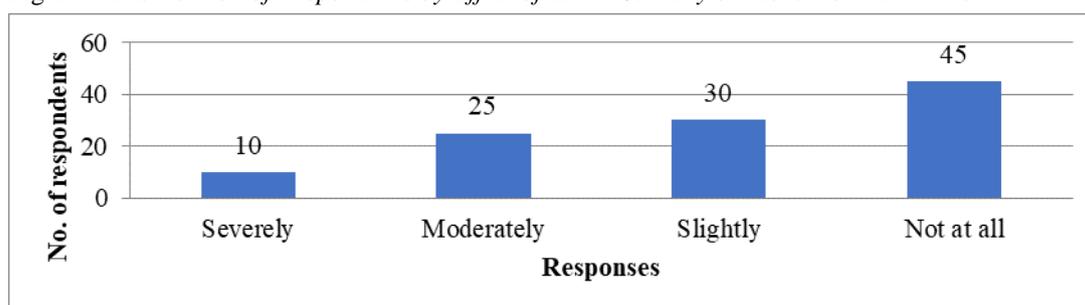
Source: Field Survey, 2025

Table 7 presents that the majority of respondents (64 percent) depended on wells during periods of water scarcity, followed by 23 percent who relied on tanker water and 14 percent who obtained water from neighbors. It is concluded that wells serve as the primary alternative source of water, indicating community reliance on local groundwater during shortages, with supplemental support from tankers and neighbors.

### Effect of Water Scarcity on Household Activities

Effect of water scarcity on household activities refers to the extent to which insufficient water supply disrupts routine domestic tasks such as cooking, cleaning, washing, and personal hygiene. This reflects the practical impact of scarcity on daily life. The distribution of respondents by perceived impact has been shown in the following figure:

Figure 4: *Distribution of Respondents by Effect of Water Scarcity on Household Activities*



Source: Field Survey, 2025

Above figure presents that the largest proportion of respondents (41 percent) reported that water scarcity did not affect their household activities, followed by 27 percent who experienced slight impact. About 23 percent reported moderate disruption, and 9 percent experienced severe disruption. It is concluded that while most households were minimally affected, a notable proportion faced

moderate to severe challenges, highlighting localized impacts of water scarcity on daily household functioning.

### **Discussion**

The findings of the study indicate that most households in the Surkhet study area do not experience regular or severe water shortages, although over half reported reduced water supply during the dry season. This aligns partially with Gurung (2019), who observed that rural communities in Nepal's mid-hills face unreliable water supply, particularly in periods of scarcity, and that women and low-income households bear the brunt of water collection responsibilities. Similar to Gurung's findings, the present study also highlights the seasonal influence on water availability, suggesting that while Surkhet households generally cope with short-term shortages, seasonal water stress remains a critical concern requiring effective coping strategies.

The study also found that households relied on short-term water storage and alternative sources, such as wells, tankers, or neighbors, during periods of scarcity. This resonates with Dhital (2020) and Khanal (2023), who reported that access to alternative water sources and household-level initiatives, like storage or rainwater harvesting, can reduce water collection burdens and improve household resilience. However, unlike Dhital's study in remote mountainous villages where collection time was a major burden, households in Surkhet experienced fewer daily disruptions, indicating that semi-urban communities may have comparatively better access or management of local water systems, though seasonal and dry-period shortages remain challenging.

Perceptions of water scarcity causes in Surkhet were primarily attributed to poor management, population growth, and climate-related factors. This finding echoes Pradhan (2021) and Poudel & Shaw (2025), who emphasized that water insecurity in Nepal is driven by institutional inefficiencies, urbanization pressures, and environmental changes. Moreover, low levels of complaint to authorities and variable satisfaction with the water system parallel Poudel & Shaw's (2025) observations regarding household resilience and local governance in urban-rural linked water systems. The study thus underscores that even where water availability is generally adequate, institutional performance, seasonal variations, and household coping strategies critically shape community experiences of water scarcity, highlighting the need for context-specific interventions in semi-urban districts like Surkhet.

### **Conclusion and Implications**

This study highlights that while Surkhet households generally do not face regular or severe water shortages, seasonal water stress remains a significant issue, especially during the dry season. The findings suggest that households in Surkhet are able to manage short-term water shortages through various coping strategies, such as water storage and relying on alternative sources like wells or tankers. However, the study also reveals that water insecurity is often linked to factors such as poor management, population growth, and climate change. While the semi-urban setting of Surkhet allows for more consistent access to water compared to rural areas, seasonal and dry-period shortages still pose challenges.

The study underscores the importance of improving water management systems, particularly in the face of seasonal variability. While Surkhet households have found ways to cope with

temporary water shortages, institutional inefficiencies and local governance issues must be addressed to ensure long-term water security. Given the seasonal nature of water stress, interventions focused on improving water storage infrastructure, alternative sources, and resilience strategies for households are essential. Moreover, addressing the root causes of water insecurity such as population growth and climate-related changes will require integrated, context-specific solutions that involve both local communities and government agencies.

#### Author's Biography

Chandra Prakash Acharya is an Assistant Professor in the Department of Health and Population Education at Mid-West University, where he has served for the past 14 years. In addition to his teaching role, he currently serves as the Head of the Department, overseeing research activities and leading academic planning within the department.

#### References

- Dhital, R. P. (2020). Water for life: Ceaseless routine efforts for collecting drinking water in remote mountainous villages of Nepal. *Environment, Development and Sustainability*, 22, 7909-7925.
- FAO. (2023). *Water and agriculture*. Retrieved from <https://www.fao.org>
- Gurung, A., Adhikari, S., Chauhan, R., Thakuri, S., Nakarmi, S., Ghale, S., ... & Rijal, D. (2019). Water crises in a water-rich country: Case studies from rural watersheds of Nepal's mid-hills. *Water Policy*, 21(4), 826-847.
- Israel Water Authority. (2023). *Water management strategies*. Retrieved from <https://www.water.gov.il>
- Khanal, G., Maraseni, T., Thapa, A., Devkota, N., Paudel, U. R., & Khanal, C. K. (2023). Managing water scarcity via rainwater harvesting system in Kathmandu Valley, Nepal: People's awareness, implementation challenges and way forward. *Environmental Development*, 46, 100850.
- NITI Aayog. (2023). *India's water crisis*. Retrieved from <https://www.niti.gov.in>
- Parajuli, R., Saud, P., Joshi, O., Kunwar, S., & Nepal, P. (2025). Perceived adverse impacts undermine socio-economic benefits of resin tapping to the rural livelihood in far-western Nepal. *Scientific Reports*, 15(1), 23587.
- Poudel, N., & Shaw, R. (2025). Challenges of Urban Water Security and Drivers of Water Scarcity in Kathmandu Valley, Nepal. *Urban Science*, 9(3), 54.
- Poudel, N., & Shaw, R. (2025). Exploring household resilience indicators in the context of urban-rural linked water systems and post-disaster scenarios in Kathmandu valley. *Ecological Modelling*, 510, 111320.
- Pradhan, S. P. (2021). Drinking water status in Nepal: An overview in the context of climate change. *Journal of Water, Sanitation and Hygiene for Development*, 11(6), 859-866.
- UN-Water. (2024). *Water scarcity*. Retrieved from <https://www.unwater.org>
- WaterAid Nepal. (2023). *Water access programs*. Retrieved from <https://www.wateraid.org/np>
- World Bank. (2023). *Water overview*. Retrieved from <https://www.worldbank.org>