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Department of Culture and Learning

Master of Arts in Tourism

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Research Title

“Tourism Led Water Scarcity in Shogran Valley, KPK. A Case Study on the Impacts of Tourism Growth on Water Resources and Community Livelihood in Shogran Valley.”

Supervised by: Martin Trandberg Jensen

Submitted by: Amjed Ali

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Dedication

This thesis is dedicated to Pakistan and its people. It is a dedication to the people of its rural areas who suffer in silence as the world passes by them into the future. These communities face hardships and struggle that many of us are blissfully unaware of. This thesis shines a light on some of these struggles and is written in hopes of one day eradicating them.

Abstract

Tourism in any country is often promoted as a ladder for economic growth. However, when that growth takes place in the absence of precise planning and governance, it can severely affect natural resources. Mostly, countries' mountain regions are marketed as their main tourist spots; thus, inadequate planning of tourism in these regions causes damage to the natural water resources. This thesis takes this concept and applies it to the Shogran Valley tourism crisis in Pakistan, with a specific focus on water shortage due to unsustainable tourism growth, resource mismanagement, governance failure, and exploitation of the local residents. Shogran Valley is a popular hill tourism destination, and it has experienced a lot of tourism growth over the past twenty years without any regulations on water management, which makes it an appropriate case to observe resource depletion due to tourism.

The study follows a qualitative research design in order to observe how tourism growth has affected water resources and distribution across the valley. A semi-structured interview was used to collect primary data from local residents, tourism stakeholders, and government officials. These interviews helped shine a light on the effects of tourism in the valley, mainly focusing on water resource management. In addition, secondary data like academic literature regarding tourism in mountainous regions were used to justify the findings.

The findings point to a direct link between tourism growth and water shortage in Shogran Valley. The number of hotels increased from three to more than thirty in the span of twenty-two years, while the main water supply system is still mostly unchanged. It provides about 11-12 liters per second. As the peak tourist season starts, the water demand exceeds the supply. This results in unfair distribution of water, which only favors the hotels over local residents. The unequal distribution leads to conflicts between the two communities as the locals complain about the reduced access to safe drinking water and insufficient water for agriculture and livestock. Additionally, the study shows that these issues arise mainly due to the lack of adequate water governance. Issues like leakage in supply lines, lack of storage capacity, absence of water-controlling valves, and weak maintenance systems lead to more frustration among the local residents.

The study also highlights some social consequences of the tourism-induced water crisis. Women and girls of Shogran Valley are mainly responsible for collecting water from distant sources during the peak tourism season due to the scarcity of water. This indirectly affects the already low education productivity for girls while increasing physical hardship. Lack of privacy is also a concern that many young girls feel when tourist activities break their community spaces. The findings highlight a global pattern observed in mountain tourism destinations, where an imbalance in power lets tourism operators control water in the absence of governing bodies.

Although tourism has generated many economic benefits, like seasonal employment, often these benefits are unequally distributed. Most of the large-scale investments are controlled by out-of-state contractors, which causes a rise in living expenses for local residents. It also affects crops and makes water insecurity more vulnerable. The study thus states that economic gains in the Shogran valley are obtained at the cost of social equity and environmental sustainability.

In conclusion, the study focuses on the need for a shift from quick-fix strategies toward long-term resource sustainability for Shogran Valley's tourism crisis. It dives deeper into the importance of proper water governance reforms and community engagement. It lights up the risks that continued tourism growth brings for the water resources and the lives of the local residents. The findings add to the broader discussion on tourism as a global phenomenon in relation to water scarcity in the mountain regions. It also offers intervention-relevant insights for contractors, authorities, and development practitioners.

Keywords: Mountain tourism, Water scarcity, Shogran Valley, Governance, Local communities, Low education productivity, Physical hardship, Social equity, Community engagement

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1 Introduction

1.1 General

Pakistan has experienced greater enlightenment in the fact that tourism is a powerful tool of national and regional economic growth. Empirical studies indicate that tourism development has a close and long-term relationship with the performance of the country's economy and point out the advantages that tourism offers in terms of the development of the infrastructure, generating job opportunities, and enriching the culture (Imran & Ali, 2024). Khyber Pakhtunkhwa (KPK), particularly its mountainous regions, is becoming a tourist-developing hub in Pakistan. The reason is that these areas are not only valued with regard to natural beauty, but they can also be developed within the area. The research indicates the presence of growing amounts of tourists coming to these regions, and not all studies directly quantifying tourism dynamics in KPK are yet present (Ahmed et al., 2024).

This tendency may be traced in Shogran Valley, Kaghan Valley, KPK. The scenic beauty and its accessibility have enhanced the number of visits to it, specifically in summer. As evidence from Gilgit-Baltistan, also a vulnerability-vulcanized mountain tourism site, shows that residents are increasingly frustrated by environmental demands of mass tourism, such as the destruction of ecosystems and the infrastructure-induced strains (Qutoshi et al., 2023). This means that, unless sustainable management has been applied, Shogran will suffer the same ecological and social stressors. The mountainous terrain is also predisposed to vulnerability due to the absence of water supply, seasonal diversity, and sensitivity of the ecology. A detailed study undertaken in the Himalayan resorts of Murree and Havalian revealed that groundwater, which supplies almost 85 percent of the total population, is insufficient to meet the current consumption needs. Besides, climate change and the increased rate of urbanization further undermine the unbalanced water supply (Virk et al., 2020). The results depict the greater water scarcity issues in uplands and dry areas of Pakistan (Khan et al., 2024). Furthermore, the social attitudes of Pakistanis are characterized by the growing anxiety about the social aspects of the problem of water shortage: an ineffective system of infrastructure, unsustainable use of agriculture, and inequity in the socio-economic sphere (Zulqarnain & Khan,

2024). The experience of arid areas underscores the urgency: in the Thar Desert, studies indicate that in a limited water supply, it falls to women and children who must bear the cost of education and livelihood in disproportion (Hirani & Ali, 2023).

1.2 Problem Statement

Although tourism is rapidly growing in Shogran, it diminishes the water resources in the area. The current water supply and irrigation system of the valley is limited, and current tourism growth creates higher water demand in peak seasons, whereas its impact on the community further makes the situation more vulnerable. The basis of this challenge can be summarized in a number of factors:

Mismanagement of resources: Excessive water consumption, absence of integrated infrastructure, and poor institutional controls are some of the practices that lead to water scarcity (Begum & Ali, 2025).

Unequal Resources Division: Tourists and tourism facilitators usually enjoy the first-mover status at the prejudice of the local resident families and farming requirements.

Tourism Impacts: The local residents may face the challenges of meeting the demand for water consumption, water availability, soil preparation, cultural events, and farming commodities. Such things may have drawn results due to tourism growth in the region. It also gives a clear indication of the sustainability issue in the area.

1.3 Relevance and Justification

Academic Relevance: The research study describes the following discipline:

Effect of Tourism on Environment: Rapid development of tourism, without major plans focusing on climate-resilient activities that are essential for the environment, has a negative impact on the environment.

Managing resources in Terrain Topography: Indeed, it is acknowledged that water management in hilly areas poses a significant challenge, particularly in the context of Pakistan, where water management in a rocky environment due to tourism has led to pronounced ecological and socio-economic situation impacts (Begum & Ali, 2025; Zulqarnain & Khan, 2024).

Focus on Socio-Economic Gain: Fair and good water management is important for community livelihood and their necessary items for utilization, like water, food, shelter, livestock, and agriculture. If tourism is planned with community development, then it would account for satisfactory water handling in the area.

Long-Term Tourism Sustainability: Uncontrolled, overuse, and mishandling may destroy the resource base- eroding visitor satisfaction and the economic base on which communities are increasingly relying.

1.4 Problem Formulation

The aim of the project is to examine the role of resource mismanagement through tourism in water shortage in Shogran Valley, and the implications of this water shortage on the community living in the valley and the sustainability of tourism in the long run.

1.5 Objective and Research Question

To solve the aforementioned formulation, the following aims are followed by the study:

- i. To navigate the water shortage in the Shogran Valley based on tourism.
- ii. To determine the proportion of the mismanagement of resources that incur water shortages.
- iii. To identify the impacts of water shortage on social, economic, and cultural aspects of the local population.
- iv. To propose sustainable water management systems that balance the demands of tourism and the community

The following is the research question that will be examined to assist in the enquiry:

- i. How has the increase in the tourism industry contributed to shortage of water in the Shogran Valley?
- ii. What are the most prevalent types of mismanagement of resources in the local water governance system?
- iii. Which opportunities and limitations have the local residents about their livelihood, health and daily activities, related to water shortage.

1.6 Conclusion

Overall, this chapter has set the background of the study, problem statement, relevance, and theoretical foundation of the study on the topic of tourism-led water scarcity in Shogran Valley. The discussion shows how the accelerated tourism development, misuse of resources, and unfair allocation of water are jeopardizing the well-being and sustainability of tourism. The issue of water scarcity is placed in the context of political ecology, which explains why the study not only defines the problem as an ecological issue but also as a governance and justice issue. The set objectives and research questions indicate a specific direction in addressing the depth of the problem and the ways of finding sustainable water management methods that can reconcile the needs of the community and tourism development.

2 Literature Review

2.1 Tourism Growth and Its Association with Water Demand in the Mountainous Region.

Higher altitudes in the world are usually sensitive to the environment, and the water supply of the area may be affected by seasonal snow-surge, rain, run-off of the glaciers, and springs, so the mountainous areas are especially susceptible to the demand fluctuations (Schulze & Schmeier, 2012). Research in the Himalayas will have revealed that as tourism grows, in particular around the peak seasons, water consumption, in the form of hotels, lodges, and other related services, grows very high and very often exceeds the capacity of the local water systems (Gulia, 2007). As an illustration, the amount of water consumed by each guest night in mountain tourism destinations has been discovered to be much greater in developing countries compared to the local average consumption, thereby disproportionately using water resources (Hall et al., 2015). A study on tourist towns near high altitude hiking in Nepal found that staff and management of hotels were using over 2.5 times the average household amount of domestic water each month during the high tourism months, reducing stream flow to domestic users down the river (Wani et al., 2025). Likewise, the depletion of local springs in fragile mountain ecosystems has been associated with tourist lodges in the Andes of South America, particularly in cases where there is a lack of infrastructure (storage, piping) and high leakage (Aggarwal et al., 2018). Furthermore, the problem is exacerbated by the so-called tourism seasonality, since during low seasons, under-exploited infrastructure and water systems are present, and during high seasons, there is an abrupt increase in consumption, which not only overwhelms the water supply but also its quality (Duro & Turrión-Prats, 2019). These trends indicate that in mountain tourist destinations, tourism development frequently equates to water demand, which existing water systems, in a developing environment with weaker governance and infrastructure, cannot match.

2.2 Governance, Institution Failure, and Resource Mismanagement in Tourism-Dependent Economies.

Governance structures and institutional frameworks are crucial in mediating how water demand from tourism interacts with resource supply and community needs (Mollinga, 2008). In many developing countries, weak regulatory oversight, unclear water rights, and inadequate enforcement lead to over-extraction of groundwater, unregulated private boreholes, and illegal diversion of water for tourism infrastructure (Mukherjee, 2020). A study in alpine Bhutan found that local community springs suffered from a drop in volume when hotels expanded beyond originally approved zones, because there was no mechanism to monitor hotel water withdrawals or enforce local water sharing agreements (Beal, 2025). The developing nation, like the Lombok tourism spot in Indonesia, which facilitates the mountaineers and hiking experts to climb to Rinjani Mountain, which has a gravity flow method, has raised water shortage, repair issues, and a lack of a sustainable approach in design and its implementation (Mandiartha & Tanjung, 2021). Similarly, the tourism growth in Mexico, with its policy in guarding the natural springs and specific management with an institution, seems vulnerable (Solís, 2022). Furthermore, studies reveal that where tourism contributes significantly to local economies, political incentives sometimes encourage prioritization of tourist water supply (hotels, resorts) over household or agricultural users, exacerbating inequities (Becken & Simmons, 2002). In sum, the literature suggests that institutional failures are not only about the absence of rules but about how power, governance capacity, accountability, and enforcement mechanisms (or lack thereof) shape resource mismanagement in tourism-dependent economies.

2.3 Community Perception, Livelihood impacts of socio-economic dimensions of water scarcity

The perception of tourism effects among the residents is complex, and in most cases, the acute issue of resources and livelihood insecurity prevails when tourism pressure strains the local water resources (Andereck et al., 2005). Literature on social exchange and community participation demonstrates that the perception of tourism is determined by whether they believe they are getting fair returns and whether their institutions uphold or jeopardize their rights to resources when water becomes restricted or

unreliable because of tourism. The attitudes towards tourism are significantly negative, and tensions increase (Tosun, 2006). Tourism-induced or worsened water scarcity has practical socio-economic impacts on households involved in agriculture, small-scale animal husbandry, and cottage industries since water scarcity induced by tourism reduces production, elevates the extent of labor (often by females), and compels expensive adjustments such as buying water or driving further to obtain it (Adger, 2010). In the mountain and island tourism context, the literature records that the seasonal nature of tourist demand can cause local water utilizations to be displaced over peak months, thus compromising livelihoods and eliciting long-term economic and socially less favorable coping behaviors (e.g., rationing, migration, altering the patterns of local cropping) (Gossling et al., 2011). Gendered studies point out that water scarcity predisposes women to do unpaid labor more frequently and limits their time to earn an income, hence worsening the already existing inequalities in socio-economic status (Adger, 2010). The perceived impacts literature also emphasizes how strong social capital and participatory structures of community in relation to stress can intermediately mediate how severe the social effects of scarcity are - communities with high social capital and participatory structure and arrangement with tourism operators tend to cope with stress better or negotiate some form of compensation (Tosun, 2006; Adger, 2010). Research in varying contexts highlights that policy actions that focus on technical solutions (i.e., more wells, short-term trucking of water), which lack consideration of distributional equity and livelihood requirements, are likely to be both unsustainable and socially controversial (Gossling, 2015).

Tourism is the main economic driver in places like Shorgan Valley, where community and lifestyle impacts are the main focus in understanding the vast socio-economic dimensions of water scarcity. Studies on the sustainability of the environment in tourism often talk about how the attitude and behaviors of local residents shape communities' reaction to the environmental pressures that arise with tourism growth, especially water resource depletion (Han, 2021). They note that environmental knowledge, social norms, and environmental values affect local residents' views on tourism as well as the views of tourists who are pro-environment. In the Shogran Valley, residents link water shortage issues with the peak season tourism, as they coincide with each other. Particularly, the ones that depend on agriculture for their bread and butter. Han's review highlights that acknowledging and understanding these views is an integral part of

developing tourism strategies. In fact, the study takes it a step further and states that these perceptions should be integrated into sustainable tourism strategies, as it is vital for decreasing the negative socio-economic impacts that tourism causes.

2.4 Tourism and use of utilization conflicts in developing countries: Lessons from South Asia

Studies in South Asia and in other developing areas indicate that tourism can trigger, escalate, or reorganize water-use contests where institutional capacity of managing multiple and conflicting demands is weak or in a transition (Shah, 2010). The thesis of groundwater anarchy, as formulated in South Asia, shows that the proliferation of private extraction plus vague state control can result in the loss of resources and interpersonal disputes between the consumers when new sources of demand, like tourist accommodation, enter into the local water economies (Shah, 2010). A water footprint review and sectoral demand trends in tourism show that, despite the relatively small contribution of tourism to national water consumption, the use of tourism resources can be extensive on the destination level in water-scarce locations due to the spatial clustering of tourism use and its typical timing in relation to the lowest point of natural water resources (Gossling et al., 2011).

Examples in case studies of both island and mountain (as well as semi-arid) destinations reveal patterns of recurring conflicts: hotels and resorts claim a water right supported by capital and politics; cities strive to provide more water, which only benefits affluent clients; rural or peri-urban households lose access to less reliable and higher quality service, which leads to protests, lawsuits, and social tension (Gossling, 2015; Swyngedouw, 2004). Examples in South Asia, in particular, of irrigated plains and upland tourist towns, demonstrate how land-use transformation and introduction of individual water infrastructure and changes in municipal provisioning can transform formerly communal or seasonal water regimes into privatized and contested spaces (Shah, 2010). Lastly, researchers say that conflicting issues need institutional solutions that involve combining control measures with regulation, community involvement, economic tools (e.g., water tariffs due to scarcity), and the responsibility of the tourism industry an integrated strategy which considers not only the structural political-

economic factors of the conflicts, but also the immediate technical causes of conflicts (Mollinga, 2008; Gossling, 2015).

2.5 Empirical Evidence of Water Scarcity in Pakistan

Recent syntheses of the national water situation in Pakistan have described it as an emergency, multi-dimensional scarcity issue that develops due to the increasing demands, failures in governance, and the use and exploitation of resources in an unsustainable manner (Ahmad et al., 2023). According to national evaluations, the surface and groundwater reserves are increasingly experiencing the pressure of over-exploitation, pollution, and inadequate storage capacity, which result in acute shortages in most provinces (Ishaque et al., 2022). Pakistan is also especially vulnerable to climatic variability and, therefore, to disruptions in the water flow due to an extremely high dependence on the Indus Basin, fed by seasonal snowmelt and glacier runoff of the Hindu Kush-Karakoram-Himalaya (HKH) region (Rasul, 2014). Vulnerability assessments and in-depth reviews of Pakistan commissioned by multilateral organizations have reported on how the shifting patterns of glacier melting, the shifting pattern of monsoon regimes, and the growing intensity of extreme events (droughts and floods) are already disrupting the timing and reliability of inflows that support irrigation and municipal supply (Parry, 2016). Disaggregated studies on the regions indicate further that water scarcity varies differently throughout the country: irrigated plains experience long-term blue-water pressure and loss of canals, whereas upland and mountain communities experience seasonal scarcity and weak springs (Khan et al., 2021). High blue-water use in primary crops is empirically measured at the basin level (e.g., in the Peshawar Basin and in the Indus system). It demonstrates that agricultural water use is a primary source of high blue water use, consuming a significant portion of the available surface water, which could be used by domestic and other applications in dry months (Khan et al., 2021).

Research on high-mountain and Hindu Kush communities records the seasonality of local water systems (springs, seepage, glacial runoff) and their susceptibility to climatic changes, as well as upstream water consumption, generating local water deficits around peak demand periods, like summer tourism seasons (Rasul, 2014; Khan et al., 2021). Lastly, policy reviews and systematic literature suggest that the water crisis in Pakistan is not about a biophysical problem alone: the inefficiency of governance, fragmentation

of sectors, and lack of modern irrigation and urban water infrastructure development have been among the key contributors to the existing and predicted water losses in the country (Ahmad et al., 2023; Nazli et al., 2024).

As the Shogran valley is a tourism-dependent region, the local residents have their own perception of the social impact of improperly governed tourism growth. In order to address the socio-economic dimensions of water scarcity, one must understand these perceptions. Many researchers have concluded that the quality of life of local residents is highly dependent on their perceived social impacts of tourism. It also affects their support for the growth of said tourism in that region (Ramkissoon, 2023). As tourism-related water issues arise, the local residents perceive them as issues that also threaten their livelihoods, such as their daily routines, as many of these residents rely on agriculture as their main source of income. These perceptions also influence the local residents' behavior toward new businesses moving into the region, as it weakens their support. When their perceptions are integrated into tourism planning, it can help alleviate some of the pressure around the community and can help ensure that issues like water scarcity are properly addressed. Through adequate governance and community engagement, the region can help enhance the quality of life for residents and tourism growth.

2.6 Theoretical Foundation

Butler (2025) developed the Tourism Area Life Cycle (TALC) model, which is one of the most impactful models to comprehend the development of destinations and environmental stressors. According to the theory, the destinations move through six stages, namely exploration, involvement, development, consolidation, stagnation, and decline or rejuvenation. With the increase in tourism, there is increased pressure on natural and social systems. In the absence of planning, the destinations are pushed into stagnation through the overutilization of resources, contamination, and strain on the infrastructure. This framework can be applied in mountain destinations like the Shogran Valley to explain the impact of uncontrolled and fast tourist growth in the destination on the demand for water and environmental degradation. The number of visitors rises, accommodation areas are enlarged, and local water resources are depleted during the stages of development and consolidation, which are typical of the water shortage caused by tourism. The uncontrolled growth can result in the depletion of the local water

sources and a decrease in the level of resident satisfaction, as evidenced by empirical research in other vulnerable destinations, including Nepal, Bali, and Thailand (Mycoo, 2006; Go et al., 2020). The implementation of TALC permits this project to place the experience of Shogran Valley within a larger trend of unsustainable destination development, as adaptive management and community-like interventions are necessary to implement prior to its deterioration.

Another astonishing theory, generally known as the Social Exchange Theory (SET), is extensively applied in tourism research to describe the perception of tourism development by the residents and the response (Ap, 1992). It implies that people and societies assess tourism by balancing the perceived benefits (e.g., income, employment, infrastructure) and the perceived costs (e.g., congestion, environmental degradation, resource scarcity). Where the costs exceed the benefits, the residents will develop negative attitudes towards tourism, thus resulting in conflict, resistance, or demand regulation. In the case of Shogran Valley, SET is particularly applicable since local people face a lack of water, and their livelihoods are affected during the high-tourism season. The way they view the fairness of tourism, whether they are included in the economic gains or they only incur environmental expenses, influences their overall stance on tourism growth, whether favorable or unfavorable. The theoretical lens can be used to analyze community satisfaction, cooperation, and involvement in water governance. The findings of empirical research in Nepal, Thailand, and Turkey prove that the lack of resources, including water shortages, is a significant negative determinant of the communal support of tourism (Andereck et al., 2005; Nunkoo & Ramkissoon, 2011). Using SET will add a social aspect to research by connecting the environmental degradation (water scarcity) with the attitude, trust, and engagement of the residents in sustainable tourism planning.

Carrying Capacity of Tourism (TCC) deals directly with the sustainable thresholds of tourism development as far as environmental and resource restrictions are concerned. According to the TCC theory, all the destinations have a breaking point when the tourist activities exceed, and the environmental degradation, loss of resources, and drop in visitor and resident satisfaction are experienced (Saveriades, 2000). In the case of Shogran Valley, this theory is a direct grasp that can be used to check the extent of the high rate of tourism growth that has surpassed the ecological and infrastructural

capacity of the valley, especially when it comes to water supply, which leads to water scarcity, deterioration of the quality of life of the local people, and strain on natural ecosystems. Using TCC, the study will be able to evaluate the equilibrium between tourism development and the sustainability of the available resources systematically to highlight the importance of planned visitor management and regulation of water resources to ensure the sustainability of the environment, together with the well-being of the communities.

2.7 Conclusion

According to the analyzed literature, it is evident that the problem of water scarcity, caused by tourism, is a three-dimensional issue that combines ecological vulnerability, governance challenges, and socio-economic disparities. The experience in mountainous places around the world reveals that tourism development frequently increases the water demand in ways that are not met by the available natural and artificial infrastructure, and that the relatively low governance structures and institutional failures exacerbate the situation by facilitating mismanagement and unequal distribution. The issue of scarcity has always been pertinent to community studies because it is a major factor that weakens livelihoods, supports gender imbalances, and gives rise to negative attitudes toward tourism, thus breeding tensions between local people and industry players. Further evidence provided by South Asian experiences includes the water-use wars worsening, where tourism and poor institutions interplay with private mining and seasonal developments. In Pakistan, national and regional investigations have affirmed that scarcity is already acute, influenced by climate variability, overuse of agriculture, and poor infrastructure, and upland tourist valleys are experiencing severe seasonal shortages. The sum of this intellectual step forward is to indicate that water scarcity as a result of tourism is not a singular eventuality but a systemic process that requires compound responses that integrate the sustainability of the ecological system, institutional responsibility, and management that is people driven.

3 Materials and Methods

3.1 Description of the Study Area

The Shogran Valley is located between 34.63958 N and 73.46648 E in the Hazara region, province of Khyber Pakhtunkhwa, which comprises the districts Abbottabad, Haripur, Mansehra, Torghar, Battagram, and Kohistan, but the Shogran Valley lies in the district Mansehra near the famous city of Balakot (as shown in Figure 2). The length and width of the area are approximately 46 and 22 km (about 30 km) from Balakot, the famous city conquered by the notable personality Syed Ahmed Shaheed in 1831. The final military confrontation for Syed Ahmed Bareilvi occurred in 1831 near Balakot, where his movement was crushed by the Sikh Khalsa army, leading to his death (Khan, 2024). Shogran Valley has its chronicle intervention from ancient times to the Mughal dynasty in India. In the past, it had been a source of adventure and tourist attraction due to its unique topography. In addition, the British Guest House of 1886 in Kamal Band in Khagan Valley is a manifest way for tourism initiatives in the region. Whereas Balakot borders it to the South, Kashmir to the East, and Naran, Khagan, and Gilgit Baltistan to the North. The Shogran Valley's geography has historically defined its dual role: its pastures sustained the migratory cycles of Gujjar and Bakarwal pastoralists, while its mountain passes placed it on a connective network for travel between the Kaghan Valley and beyond (Drew, 1875). The environment in the study area is humid temperate, with a cold and pleasant climate. The temperature typically ranges between -6°C and 15°C , depending on the season. It includes the Siri Paye top climax of Shogran valley, a vast region in the Southwest. It has Musa Ka Musalla, in the East, it has Maikhra view covered with snowfall, and in the North, it has continuous Himalayas covered with natural streams and snow in winter, and limited waterfalls flowing in summer. Upon my multiple visits to Shogran Valley, I opted for this study area as my research.

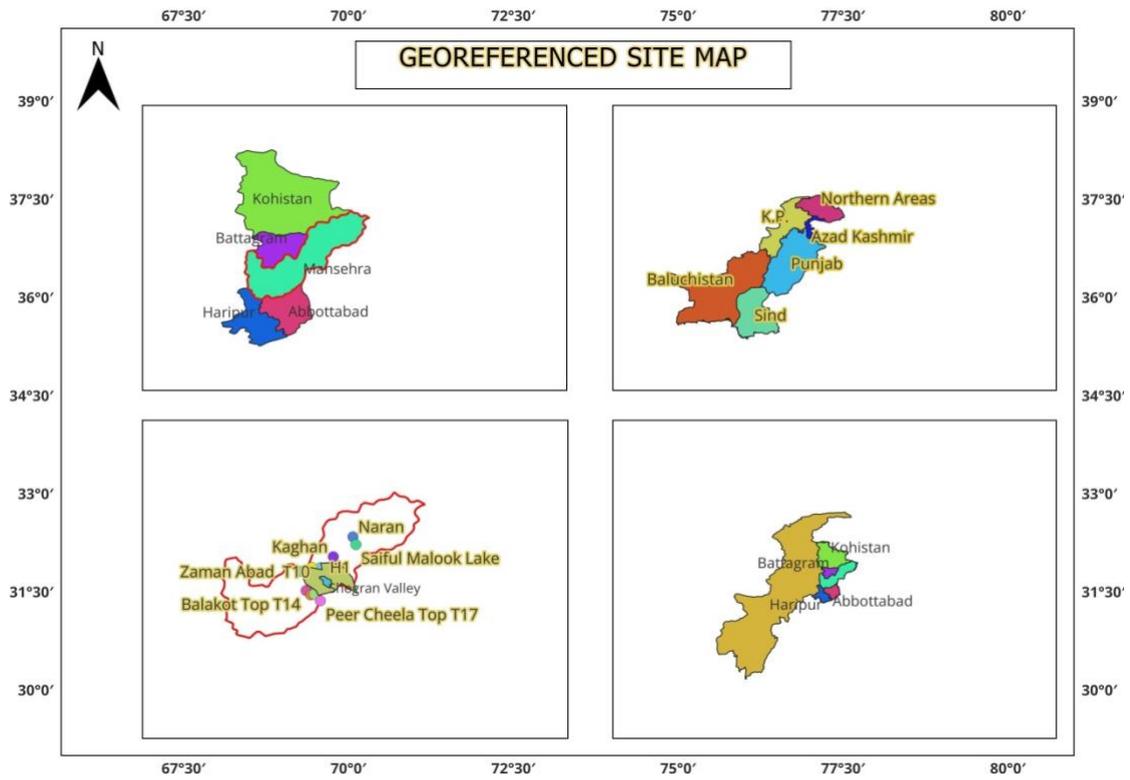


Figure 1: Location of the study Area (Source Author)

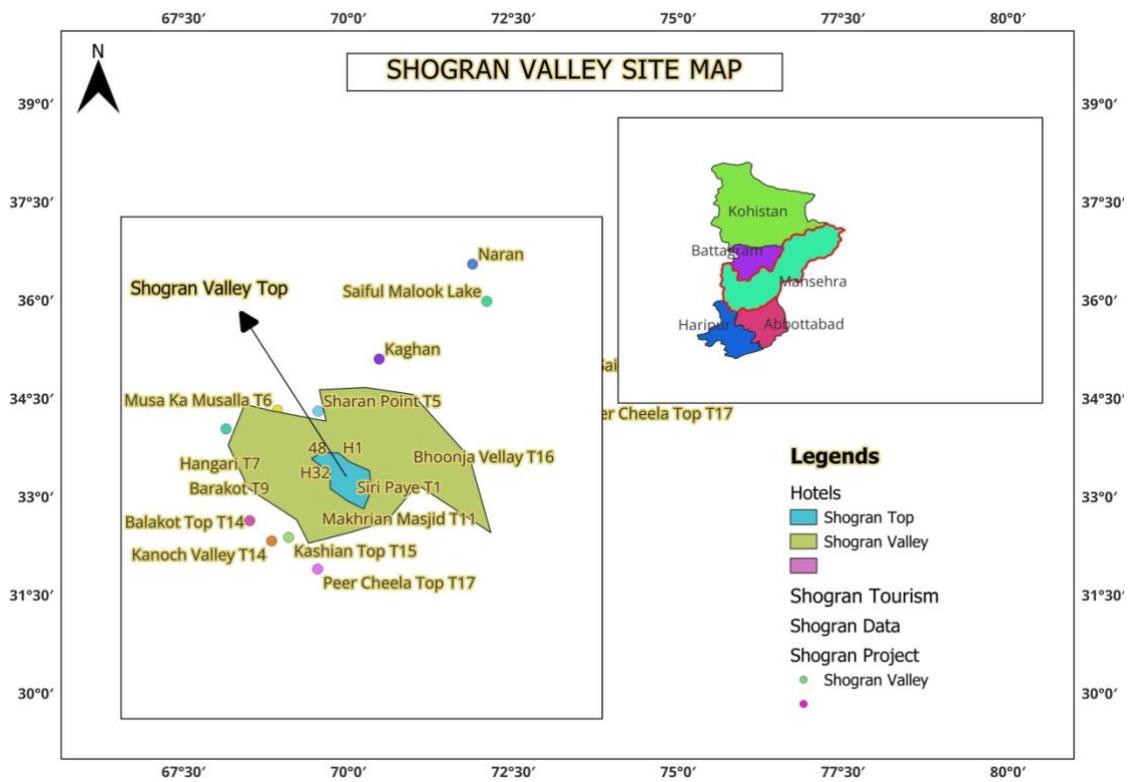


Figure 2: Shogran Valley Map (Source Author)

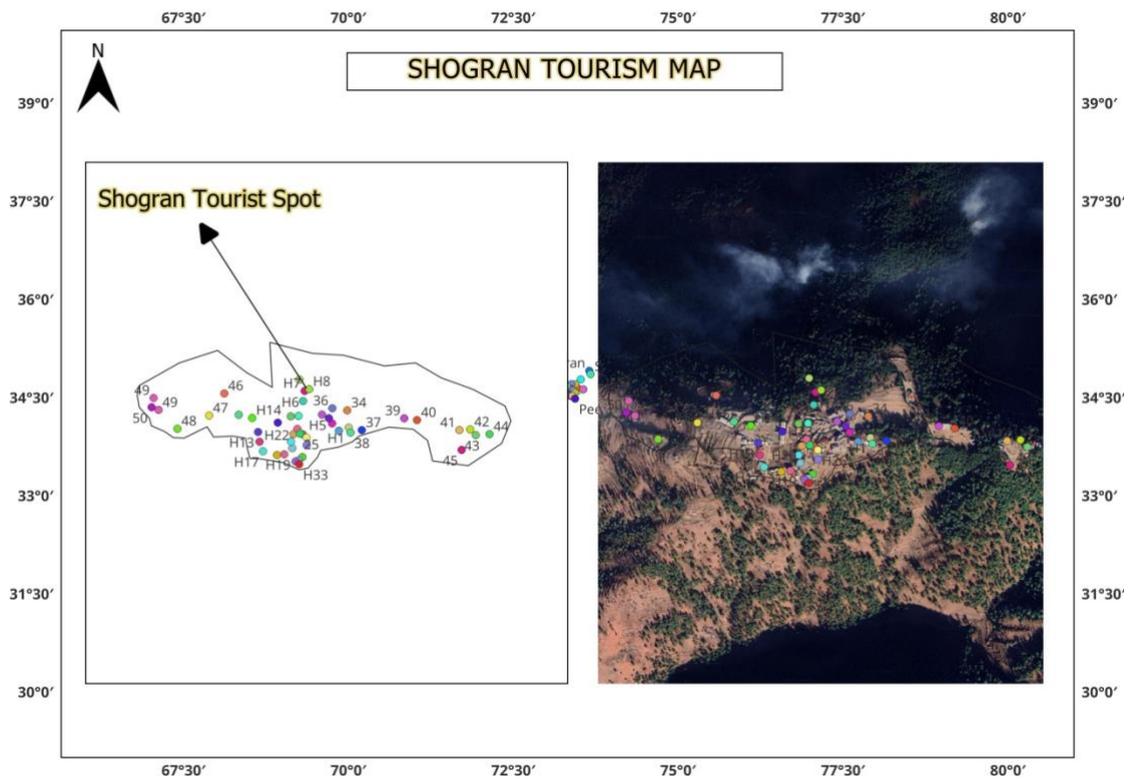


Figure 3: Shogran Google Earth Map (Source Author)

3.2 Research Methodology

This study uses a semi-structured interview method to collect data. While I was visiting Shogran Valley during my tour to Pakistan, I noticed the odd state of the local springs, which led me to investigate further into the matter. While conversing with the residents, I decided to gather the data in a more formal way after my tour. The philosophical foundation is feasible for analyzing and interpreting the collected data. The methodology is described with particular attention to the systematic process of defining and resolving the research question. The discussion on methodological selection includes the use of various techniques and tools for data collection and analysis. The pattern for methodology is important, and it also affects the results of the study. This chapter also informs us about the relevance of the use of the semi-structured interview approach. Utilizing the method describes data collection, source of data, managing, and analyzing the data. Being a tourist led me to see how local people face difficulties in peak season when collecting drinking water. What I observed was that a few springs in the tourism season had dried. People and stakeholders face water shortages. Such key information helped me to frame the research. It explains the choice of participants and

their fair interest in reporting on the landscape of tourism. Lastly, it describes that certain parameters may affect the results, like time, study constraints, and other limited resources.

3.3 Philosophy of Science: Constructivism

The prediction on the research question to select the data collection method may be the viewpoint of the researcher on Philosophy. Using an interviewing method, the researcher uses their research approach to further solidify the qualitative nature of the study. Listening to the local residents' wants and needs, it is prominent that social constructivism plays an important part in their lives, as their stance on the reality of nature and acknowledgment of truth may somewhat achieve this. Social constructivism can be a way to explain the growth of tourism that affects water resources and the local source of income in the Shogran valley. Water related issues are the main concern of the residents of the valley. As Bryman (2016) explains, social constructivism is a global mainstream in which anyone can gain an understanding of their experience, and at the same time, this understanding is designed socially, not embedded inherently. The objective of methodology is to focus on the real active experiences of participants. Such qualitative direction is based on a logical perspective that collects the realities that are formed in social circumstances and practices. Lastly, social constructivism proceeds on the reality that is structured through common people's actions, and it does not pertain to independent thought (Schwandt, 2015). In conclusion, the study aims to focus on collecting and interpreting the viewpoints of participants in the valley related to tourism growth. Hence, the pattern of methodology frames the instruction of the philosophical theory of constructivism.

3.4 Research Approach Inductive

Water Governance and its shortage in the region can be included as a qualitative way of taking into consideration. A collection of data on different aspects of tourists and residents is necessary for qualitative analysis. Specific findings resulting from the actual field data to draw a theoretical theme are a way of understanding the inductive methodology. (Creswell & Poth, 2018). The key findings about resources, specifically regarding the water issue that local people face, are based on the study. The main key role in managing tourism is played by the district authority, which is subordinate to the

province's higher authorities. In short, data collection and working on data are the way of meaning that is derived from the pertinent theories.

3.5 Methodological Choice

Once the research philosophy is selected, the primary objective is to align the research method. Whereas the three different types of research, such as quantitative, qualitative, and mixed, in which qualitative research aims to give an understanding of the social issue through interrogative communication (Gamage, 2025). It is usual and seems feasible, like studying people's experiences and their interactions with themselves and taking results from it (Leavy, 2017). On the other hand, the quantitative approach mainly looks at the relationship between different factors using numbers and statistics (Saunders et al., 2009). This method usually works from the top down, starting with a theory and then collecting data to prove or disprove it. Finally, mixed methods combine both qualitative and quantitative techniques. This study will use the qualitative method because it is a good way to understand the experiences and views of the local people in the area being researched.

3.6 Qualitative Research Method

The Qualitative research method will be utilized for this research, as it will be suitable for me to understand the importance of water resources of Shogran Valley for the local people, as well as the impact of growing tourism in the area. I will also be able to understand the experiences and viewpoints of individuals involved in the community who are trying to implement sustainable tourism practices to support the growing tourism industry. The purpose of qualitative inquiry is to explore the lived experiences, views, and interpretations of participants or individuals within their specific context (Denzin & Lincoln, 2018).

A question-answer session that gives the interviewer the opportunity to analyze the understanding of participants is key, based on a semi-structured interview (Corbin & Strauss, 2014). The study is framed on qualitative methodology that includes online interviews with Stakeholders, Local residents, Tourism government officials, and Water Management Authorities concerning the Shogran valley.

3.7 Data Collection

The primary objective of data collection is to gather information in its raw form. Thus, the study initiates the qualitative procedure to collect the mainstream data based on interviews and communication. Getting pertinent information through participants' interviews is helpful in knowing the issue of water scarcity in the Shogran Valley. I constructed a semi-structured interview with questions that demanded a more open-ended answer. The questions were formulated on the basis of the theoretical framework of the study and hence were fewer in number. Finding the queries in interviews is also convenient for the acknowledgment of how and why phenomena occur or just relying on the precision of the frequency of the problem. (Cobern & Adams, 2020).

Examples are as follows:

In your opinion, how has this growth in tourism affected the availability and quality of local water resources?

How has water scarcity influenced your household's daily life and livelihood activities?

In your opinion, what measures or policies should be adopted to ensure a sustainable balance between tourism growth and water resource protection in Shogran Valley?

In addition to the interview, I also collaborated with one of the students in Shogran Valley, who captured and provided all the relevant photos used in this study. All the pictures used in this thesis were provided by this student with his consent.

As Dunwoodie (2023) describes, suggesting the theme through seeking the solution of research queries in interviews and communication is based on a methodology that pertains to motivation and contextual parameters. Explaining vividly, the participants' stance on the tourism growth issue is related to open-hand discussion. All interviews were conducted online to achieve accessibility and convenience. Out of eight interviews, six were held using Microsoft Teams, one with Google Meet, and one with WhatsApp call, as per the convenience of the participants.

Before the beginning of the interview, the content of the study objective was informed, and with their will and choice, interviews were audio- and video-recorded to maintain

the accuracy of the content. The collected data were then prepared for thematic analysis, a process that involves systematic coding and comparison to identify key themes related to water governance, tourism pressures, and community livelihoods.

3.8 Sampling Technique

Purposive sampling has been employed in the selection of participants based on the acquisition of the knowledge in question, their living experiences, and their professional engagement with the issues related to tourism dynamics and water scarcity of the Shogran valley. Purposive sampling was deemed suitable in this research as it allows the researcher to select individuals who can give deep, insightful, and experience-based information instead of using random participation (Palinkas et al., 2015). The first four participants were identified according to the predetermined criteria, and the rest of them were recruited using the snowball sampling method, where the key informants were identified using local networks to find those with the relevant expertise. This strategy has been effective in terms of inclusivity and has minimized the possible sampling bias (Kumar, 2018).

3.9 Targeted Population

The populations of the study were as follows: Local households in the Shogran valley, who have a seasonal fluctuation in water availability. Tourism stakeholders (hotel owners, guest houses, restaurants, and tourism operators) whose major operations with tourists depend on water. Government representatives and NGOs who were involved in the development of tourism and water governance. Local leaders who are mainly involved in the allocation of water in the locality and conflict management.

Serial No.	Name of Participants	Age	Gender	Profession
1	Zameer Ahmed	67	Male	Senior Water Management Consultant, World Bank Project
2	Tahir Akram	34	Male	Agricultural Engineer & Water Management

				Consultant World Bank Project
3	Hamza Afzal	28	Male	Tourism Stakeholder / Tourism Operator
4	Fawad Khan	28	Male	Local Resident
5	Muhammad Adil	30	Male	Local Resident
6	Khalid Mehmood	49	Male	Local Resident / Farmer
7	Liaqat Shah	47	Male	Tourism Stakeholder / Hotel Manager
8	Asad Khan	31	Male	Deputy Director KDA

3.10 Inclusion Criteria

Participant selection was done according to the following criteria:

- The residents of the Shogran Valley who have been affected by water shortage are permanent residents.
- Active tourism proprietors or hotel managers in the valley.
- Workers at local government agencies or Non-Governmental Organizations that are involved with water management or tourism planning.
- The representatives of the community who know the seasonal tourism patterns.

3.11 Exclusion Criteria

Participants were not allowed to participate in case they:

- Were short-term guests or tourists who were not involved in the community on a long-term basis.
- Refused to give informed consent.
- No direct exposure to water scarcity or any tourism related problem.

- Were below 18 years of age.

3.12 Interviews of Key Informants

The key informant interviews were carried out in order to gain expert-level knowledge and contextual insights that could not be gathered based on the views of the general population only. The key informants were chosen on the basis of their professional work, direct participation, or broad handling of the issues with tourism management, environmental sustainability, and community welfare in the Shogran Valley. Their experience placed them in a position to give valuable information on policy implementation, issues in governance, effects on the environment, and socio-economic dynamics. The protocols of the semi-structured interviews were directed towards the stimulation of open discussion and guaranteeing that all the discussions were within the scope of the main research goals. This format allowed more in-depth discussion of complicated issues, as it allowed for follow-up questions and clarification when needed. All key informant interviews were done online to increase accessibility and overcome geographical limitations. The interviews took place mostly using Microsoft Teams, with one taking place using Google Meet and one with a WhatsApp call because of the preference of the person interviewed. All the interviews were arranged at a convenient time, and each one started with a statement of the purpose of the study, research ethics, and rights of the participants. The written informed consent was received and documented on a verbal basis before each session started. Seven interviews were video recorded, and one was audio-taped with authorization so that they could be transcribed and analyzed correctly and reliably. The data obtained from such interviews helped the researchers further design the thematic analysis of the study, which merely predicted clear evidence on water shortage and local response in the study area.

Recruiting went on until they became thematically saturated, that is, they were not getting any substantially new information on the basis of further interviews. This sampling methodology guaranteed the heterogeneity of opinions, justified the investigation of multifaceted social-environmental associations, and improved the validity and situational applicability of the results of this study.

3.13 Primary Data

Personal life experiences and professional knowledge of each participant give magnificent acknowledgement of the repercussions of tourism growth. Initially, eleven participants were willing to participate in the interview, but finally, eight participants delivered their stance on the research problem. Selection of the participants was based on the theoretical instance of SET (social exchange theory) that comprises local residents of Shogran valley, stakeholders including the businessmen, hotel owners or managers, and tourism management departments.

Open-hand discussion and freely taking interviews were conducted to collect information and queries about achieving sustainable tourism practices in the area. The methodology utilized to enhance the relevant information concerning the research question. The collected information and data that are further used for analysis are confined only to the Shogran valley, and they may be obtained from results for the study of other regions or the entire region.

3.14 Semi-Structured Interviews

The basic data gathering method is taking semi-structured interviews. This procedure helps balance the consistency, like the detailed point of view of the participant related to the question. (Corbin & Strauss, 2014) The approach tells us a set of interview questions and a discussion, including the free participants of the research, their experience related to water.

Purposive sampling was used, where the participants were chosen for an interview regarding sustainable tourism to address the subject of understanding. The subject of the research direction was also forwarded to the participants, and their choice is needed in case they are willing to leave the interview at any time. Lastly, the interviews that were conducted involved eight participants, whereas two participants decided to leave the interview due to their busy schedule, and one withdrew due to difficulty with the questions and a language barrier.

The interview guide questions were framed in such a way that participants may share their views on the water issue regarding how local residents are facing water problems, how stakeholders are still relying on a single source of water, and how much tourism

has an impact on people's lives in the Shogran Valley. This scheme helped to acknowledge the perceptions of different participants with their experiences of applying for the theme to achieve the research objectives.

3.15 Secondary Data

The information that is linked with secondary data may be used for research purposes, and it is available online through published sources (Johnston, 2019). Academically, such data is important for gaining an understanding of the topic or query. It guides us to verify the research query and direction of the question. The study can collect secondary data from different sources like books, academic journals, published reports, historical records, and credible online platforms. (Stewart & Kamins, 1993).

The current study uses a comprehensive review of secondary data that includes the relevant literature, past research studies, historical documents, and government reports relevant to the vicinity of the study site. It also includes the sources from the AAU library, specifically the articles on sustainable tourism. It also highlights the research methodology that is necessary for the interpretation of primary data gathered for the thesis.

3.16 Qualitative Data Analysis

Qualitative data for the study were employed utilizing the thematic analysis. Seven out of eight participants were initially interviewed, with one in English and the others in the Urdu language. Two of the participants were from the water management department, including one water management consultant, three were local residents of the tourism area, and two stakeholders, including the hotel manager and tourism operator, and one participant from the Khagan development authority, who manages tourism in the Shogran valley. Later on, the interviews were translated into English to get an analysis. The data were processed utilizing the six-step thematic analysis, as illustrated by the model designed by Braun and Clark (2006). The procedure includes knowing the data, generating the code, searching for the theme, defining the theme, and preparing the report.

The analysis started with perception and with thorough interview transcripts. It involves reading the textual data multiple times and listening to the audio recording to gain a

better understanding of the research question with data. The actual theme for analysis is determined through a research question that pertains to the problem that people face in meeting the demand for water during the tourism peak season. The main themes and sub-themes were highlighted as part of the analysis.

3.17 Ethical Consideration

Indeed, ethical consideration is also an important part of qualitative research, consisting of protecting participants and ensuring the study is done actively. (Bryman, 2016). Whereas in the study, the ethical principles are applied, and it included getting the results from voluntary participation and having equal respect for all participants

In an easy way, the participants were allowed to communicate their preferred language and get the data in deeper for the research study, and they were allowed to skip any question if they found it difficult to answer. All participants were confident and motivated to participate in the interview.

3.18 Limitations of Methodology

A few hurdles and challenges were faced during sorting and gathering the data for the study, whereas only eight people were able to be interviewed, which acknowledges the limitations and diversity of the study. I acknowledge that more participants could provide more precise data, but I had very limited time constraints, just a week for the entire process.

The limitation regarding the scope and context of the study illustrates that the data captured only people living inside the Shogran valley, and getting interviews in person was impossible due to time and financial constraints. Hence, the total interviews were held online. However, I had previously visited the valley multiple times before starting the research, which provided me with valuable background knowledge, so my findings may not be relevant to other tourist destinations. A notable challenge for me was the language barrier. Since the local people speak Hindko as their mother tongue and Urdu as a second language, I sometimes found it difficult to understand the full meaning when they tried to elaborate on their thoughts, which I believe resulted in the loss of some nuanced responses.

Furthermore, I acknowledge a potential bias and strive for unbiasedness in my participant selection. I chose participants who were involved in the day-to-day activities of the community, stakeholders, and water management officials of the Shogran valley, which meant I was targeting a specific, limited group. Finally, because my research relies on the qualitative data I collected from semi-structured interviews and secondary sources, I do not claim that my findings demonstrate the experience and perspective of the entire region comprising the other five districts: Kohistan, Battagram, Torghar, Haripur, and Abbottabad.

3.19 Use of AI

AI tools were used primarily to assist with grammar and sentence structure, in line with the stated guidelines, while all substantive content and analysis remain the author's own. These tools did not aid in the development of original ideas or themes related to the study, nor were they used in any data interpretation or analytical frameworks. All content, analysis, and interpretations in the study are entirely my own.

4 Results and Discussion

4.1 Findings and Analysis

This chapter will discuss the findings from the collected data, which includes interviews and literature reviews, to answer the research question. The data shows that the growth of tourism in Shogran Valley is creating significant pressure on its freshwater resources.

The approach that was used to analyze the qualitative interview data was a thematic analysis. Thematic analysis is a common approach for identifying, analyzing, and interpreting meaning patterns (themes) in qualitative data (Braun & Clarke, 2006). The choice of this method is due to the flexible and systematic structure of the organization of rich narrative data, retaining the depth and complexity of the views of the participants. It was not about what participants said and heard, but also what happened in the context of underlying meanings, experiences, and contextual influences in the community and the tourism industry. Thematic analysis was specifically appropriate in this study since it allows exploring real-life issues and social processes without imposing a theoretical concept on the information (Nowell et al., 2017).

Since this study is an exploration of delicate and contextual issues, namely, tourism development, water depletion, impacts of tourism growth on communities, and governance, this form of analysis allowed the surfacing of themes based on the first-hand experiences and professional-level insights of the study participants. The data were read repeatedly after being transcribed to get familiar with the data, which was then systematically coded, categorized, and themes were developed. Themes were developed and simplified over time to guarantee the suitability and correct portrayal of the dataset in its entirety.

The thematic analysis helped to make the findings credible because it provided transparency, interpretive depth, and a close connection between the voices of participants on one hand, and the conclusions of the study on the other. This form of analysis eventually resulted in a comprehensive perception of the way in which tourism pressures overlap the water resource issues in the Shogran Valley. The analysis will

focus on how this tourist growth is impacting the valley's water resources and local community livelihoods, and the sustainable measures that could help manage this issue.

4.2 Growing Tourism driven Water shortage in Shogran

In this part of the findings, people were asked about the growth of tourism in Shogran Valley over the past years. They were asked about growth and changes they noticed within a 17-square-kilometer area. The main purpose is to lay the foundation for learning about the tourism growth that created a water shortage in the valley.

Research studies found in the Karakoram and Himalaya would have revealed that as tourism increases, in specific months like peak seasons, water use and the need for water, in the form of hotels, lodges, and other related services, also increase very high and very often exceed the capacity of the local water systems (Gulia, 2007).

Participant 1: *“Over the years, I have seen a drastic change in tourism from 2002 to 2025. Shogran had only 3 hotels in 2002, and currently it has 32 hotels that really contributed to the water shortage because the government water supply line that carries 11 to 12 LPS discharge, and the current storage capacity is insufficient for both hotels and the community.”*

Participant 2: *“Last few years, there has been an increase in population, so I have noticed the inflow of tourists in the Shogran, and in peak season, it causes water shortage, and most of the supply lines are not fit for drinking purposes because they have been polluted due to mismanagement of waste.”*

Participant 7: *As I said earlier, even though the water issue prevails, we have to arrange water for tourists because tourists are our priority. Mostly, managers are locals, and we inform tourists to use only the water needed and not waste it, but we don't have any special instructions written at the consumption points.*

Participant 8: *“First of all, I think increasing population led the growth of tourism in Shogran, but we focus on nature-based tourism, we have increased the winter tourism, and the Government is providing support to expand tourism, and there is no direct exponential effect, but the water issue prevails, and its sustainability is also in our radar*

during tourist season. We don't have a fiscal budget, but we are concerned about water sustainability and forwarded our file to the higher government for implementation.”

The participants provided their stance towards tourism growth that created water shortage in the area, and their views were almost mutual. Based on interviews with local residents, a direct connection can be made between the rapid growth of tourism and water shortages in Shogran. The number of hotels increased sharply from just 3 in 2002 to 32 by 2025, indicating the heavy demand for a water supply system that is not designed for this scale. The local water supply, which provides only 11–12 liters per second, has not been improved to overcome the water shortage in the valley.

All participants agreed that there is an increase in tourism in Shogran Valley, but two main issues make the water shortage worse. First, during the busy tourist season, water consumption rises sharply and exceeds what is available. Previous studies from Vila et al. (2018) highlighted that boom in the tourism industry led to higher water demand due to the higher consumption needs of hotels. Second, poor waste management has polluted some water sources, making the water unsafe to drink. As a result, conflicts over water have emerged, with hotels often using water that would otherwise go to local households. As assistant director, KDA reported that the issue of water storage, as shown in Figure 4, exists, so they proposed a file to the higher government for the implementation of a larger capacity tank to mitigate the peak season water issue, because the current main earnings are achieved by hotels, and KDA lacks funds. The repercussion of tourism growth creates problems like daily drinking water, washing water, crops, and livestock. In addition, tourism has developed a better source of income for local people living in the valley, but they face water shortage issues during the tourist peak season, and overall, water mismanagement sometimes raises water conflicts, indicating the failure of water and tourism management in the region.

As Gnanapala and Sandaruwani (2016) say, tourism industries often put a vast amount of pressure on limited resource environments. These include mountain regions where natural resources are even harder to find. The study mentions that when these regions are pressurized, it can affect the host economy when the demands increase and can result in inflation. Such is the case of Shogran Valley in Pakistan.

These findings show a clear relationship between fast tourism growth and increasing water scarcity, especially during the peak seasons. Participants repeatedly talked about the number of hotels increasing and connected it to the rising water demand. This aligns with the studies from the Karakoram and the Himalayan regions, which talk about tourism-driven development that affects water consumption (Gulia, 2007). Moreover, Participant 7 mentioned that tourists are their first preference, and we have to facilitate them. These findings are related to the theoretical context of Becken & Simmons (2002), who talk about tourism-dependent areas where hospitality services get preferential treatment when it comes to water allocation, and it comes at the expense of local communities.



Figure 4: Shogran Water Supply Tank - Unpublished photograph by Muhammad Tahir, October 28, 2025. Used with permission.

4.3 Resources Mismanagement in Shogran & Water Governance

The study focuses on the mismanagement of water resources and timely controlling parameters to avoid the situation from getting further worse. It begins with how the local people of Shogran manage water. It indicates that the failure of the management includes planning, distribution regulations, and maintenance protocols. By highlighting the water issue, the study may provide a vivid understanding of the initial parameters of water shortage in the Shogran Valley. This helps in creating targeted solutions for better and more sustainable water management in the future. The diminishing behavior of natural springs in hilly ecosystems is assimilated to tourist lodges in the giant Andes of South America; hence, in this situation, the lack of infrastructure, such as storage and main pipe supply leakage (Aggarwal et al., 2018).

Participant 2: *“Public health office does not pay any serious attention to Shogran valley due to it being a remote area. Tourism stakeholders (hotel managers) are least interested in maintaining the main water supply line, but they have frequent water conflicts among themselves. I think NGOs can play a better role in managing the resources and in the off-season, whereas the rainwater harvesting should be proposed to overcome the water issue in peak season.”*

Participant 3: *“I have seen a major change. Over the last decade, most of the main springs and streams, which we call 'Khurr,' have dried up. Now, they have shrunk, due to climate change, and only one spring is still. A pipe was installed about 12 kilometers away to bring that water, but its flow gets extremely low in the summer. There is also a lot of leakage from the pipe. This situation really affects the local community, especially children and women, who now have to carry their drinking water on their heads or by using donkey carts.”*

“.....From the past few years, there have been a lot of changes taking place in this area. If I can tell you briefly, like too much construction, especially of hotels.....”

Participant 5: *“We are poor people; hotel owners have power and resources. They avail themselves of most of the water during the season. There are frequent conflicts over it, and we gave applications to the government as well.”*

Participant 6: *“I think tourism is good, but it causes privacy breaches. For example, tourists camp anywhere instead of at specific locations, sometimes even near walking tracks, which creates problems. Women are especially affected in local areas, as in our region, females often work in agricultural lands.”*

Participant 8: *“There is no direct exponential effect, but water issue prevails and its sustainability also in our radar during tourist season. We don't have fiscal budget, but we are concerned about water sustainability and forwarded our file to higher government for implementation.”*

Participant 3 mentioned that over-construction of hotels causes a shrinking of water resources. This statement supports previous research in alpine Bhutan that local community springs suffered from a drop in volume when hotels expanded beyond originally approved zones, because there was no mechanism to monitor hotel water withdrawals or enforce local water sharing agreements (Beal, 2025)

Participants told that with the passage of time, infrastructure developed, but water management, water conservation, and drainage planned maintenance, specifically a proper water management plan with tourism growth, were not structured and properly implemented. As they briefed, stakeholders are still dependent on a sole source of water and have a monopoly. Participant 3 mentioned that the shrinking of springs is linked with climate change, but water consumption due to tourist strength and the temperature of the area are observed to be increasing, which could be a reason for the depletion of springs. There have also been reports about the leakage in the main water supply line, which is also not maintained or repaired to save water. Some of them observed that there is a lack of water management in areas like proper distribution of water plans according to hotel consumption capacity, water supply timing, and water allocation timing to locals, controlling water when not in use, mitigating the water issue, and ensuring equal water distribution to avoid conflict.

Participant 6 highlighted the women and girls' privacy breach as a result of tourists camping near the walking tracks instead of confining to a specific location, which is also a serious issue. NGOs and tourism development management must give indications, laws, and regulations to tourists for camping and confining their visiting area. This aligns with studies of Lonergan (2021), suggesting that the location of

camping could be a matter of conflict depending on how the nearby community reacts, and when camping occurs near the residential area, it could be interpreted by the local community as a challenge.

This institutional absence has created a lawless environment where powerful tourism stakeholders engage in water monopolization, physically guarding the supply tank and excluding local communities during the critical peak season. Consequently, severe social inequities have emerged, with local residents—particularly women—bearing the burden of water collection from distant sources, while also facing conflicts with tourism operators and losing access to water for agriculture and livestock. The mutual agreement of participants collectively predicts the consensus that the short-term interest of stakeholders and businessmen overrides long-term sustainability. It suggests that NGOs have a role in managing, proposing things like harvesting rainwater and maintaining the water resources that could direct tourism towards sustainability, and creating awareness of water waste among stakeholders and tourists. It can also help to follow up on the regulation in saving water and having equal water distribution for every consumer in Shogran valley. In conclusion, as participant P8 illustrated, their department is properly working with the government to make tourism more nature-based and resolve the other mismanagement issues of water resources.

These results show that physical water limitation is not the main reason for water scarcity in Shogran. It is strongly influenced by poor water governance and mismanagement. These findings support earlier literature that argues that governance failure in developing regions often leads to a water crisis (Aggarwal et al., 2018; Beal, 2025).



Figure 5: Main Supply Leakage (Source Author) - Unpublished photograph by Muhammad Tahir, October 28, 2025. Used with permission



Figure 6: Women and Girls' Privacy Breach - Unpublished photograph by Muhammad Tahir, October 28, 2025. Used with permission

4.4 Tourism Impacts on Socio-Economic and Livelihood

The tourism development gives a critical source of income, such as seasonal job opportunities, specifically in hotels and transportation. Despite these advantages, it frequently results in a higher cost of living and can make the local economy reliant on seasonal visitor patterns. The presence of large numbers of tourists can also interfere with traditional occupations and exert significant pressure on essential common resources, including water supplies. Consequently, a difficult balance must be struck, as the financial gains from tourism are frequently accompanied by community disruption and ecological costs.

Social capital and participatory structures of community in relation to stress can intermediately mediate how severe the social effects of scarcity are - communities with high social capital and participatory structure and arrangement with tourism operators tend to cope with stress better or negotiate some form of compensation (Tosun, 2006; Adger, 2010).

Participant 4: *“Yes, it is affecting our livelihood as we have agricultural lands, and agriculture is affected because yields are lower when water is not available at the right time.....”*

“Children sometimes have to bring water from far away. When there is no water supply, schools are affected, especially sports and activities. Homes are affected as cleanliness becomes difficult for women because they are mostly dealing with the household chores, and this creates health risks.”

Participant 7: *“I think tourism has more economic benefits as compared to its effect on the environment, as it creates jobs in construction and hospitality, but there is no proper waste management, like there are few bins. Kaghan Development Authority has not provided those bins at most of the points. So, tourists throw waste in the surroundings, causing environmental damage.”*

Becken & Simmons (2002), in their research, outlined that tourism contributes significantly to local economies, and political incentives sometimes encourage prioritization of tourist water supply (hotels, resorts) over household or agricultural users, exacerbating inequities.

The interview data shows that tourism has both positive and negative effects on the local community. On the one hand, tourism has created new jobs for residents. Participant 7 mentioned that local people found more jobs in construction, hotels, and cleaning. However, large investments come from outsiders, suggesting that the biggest financial benefits may not stay within the community.

Alternatively, tourism has disturbed the traditional livelihood and daily life. As Participant 4 mentioned, farmers face difficulties in managing water for the vegetable and other crops during peak season because a major supply of water is given to hotels, and they get very low yields, and the education of local children is also affected due to bringing water for their consumption from very far from their homes when they accompany their mothers. Whereas one participant further indicated that before tourism growth, there was no water issue, and with the passage of time, water resources in the area were not developed properly, such as constructing more storage capacity, implementing water distribution and safety rules.

Finally, some participants also described how women and girls struggle to get drinking, and in this way, their daily life gets affected by this daily routine in the tourist season. Whereas male households get very little time to reach their jobs or work because they are engaged in bringing water from far places, hence it also affects their daily wages. It represents that sustainable water planning was not implemented and does not have an equal distribution of water in the study area.

The study shows that tourism has led to the production of mixed socio-economic outcomes for local communities. Even though tourism has generated many employment opportunities, most of these are unevenly distributed, and major investments come from outside the valley. Meanwhile, water scarcity has affected agriculture and education. These findings are consistent with the literature, which suggests that economies driven by tourism often intensify social inequality and pressure common resources, especially under a poor governance structure (Tosun, 2006; Adger, 2010).

Hence, from the literature it has been highlighted that although tourism facilities provide more jobs or ways of earning for local people but also affect farming and natural environment by polluting the stream area. Thus, it is an unsustainable situation.

4.5 Strategies and Sustainable Tourism in Shogran

The study may proceed further to manage tourism in the Shogran Valley without creating problems in the future. The area faces a serious water shortage every year when tourist numbers are highest. This problem is caused by two main things: the fast growth of the tourism industry and poor management of existing water supplies. Although tourism brings money, the necessary systems to protect water and the natural environment have not kept pace. The main goal of this study is to find practical solutions that can balance the needs of the tourism industry with the urgent need to protect Shogran's limited water resource and preserve its landscape. Literature suggest that the water crisis in Pakistan is not about a biophysical problem alone: the inefficiency of governance, fragmentation of sectors, and lack of modern irrigation and urban water infrastructure development have been among the key contributors to the existing and predicted water losses in the country (Ahmad et al., 2023; Nazli et al., 2024).

***Participant 2:** “I think NGOs and government officials could help manage the landscape by enforcing strict laws on hotels and tourists. Priority should always be given to local communities first, rather than tourists.”*

***Participant 3:** “I think government should not construct more hotels due to unavailability of resources. Green area should be balanced; drainage system should be managed properly as no one is managing it.”*

***Participant 4:** “I think tourism helps in earning money, but awareness is lacking. Tourists should be educated about waste management. Being responsible is important. I suggest tourism should be sustainable. The government should use alternative waste management methods. Long-term planning is needed.”*

Participant 5: *“I think governing authorities are aware of the tourism growth so they should properly manage the existing resources. Avoid waste of water. Most importantly, I think tourist inflow should not go beyond the capacity of the Shogran, as it causes resource shrinkage.”*

Participant 7: *“In my opinion, firstly it is the responsibility of the government to resolve this issue. Secondly, we (stakeholders) and locals have to manage this issue collectively by making a social team to resolve this issue when arise, hotel owners can contribute financially to support their work.”*

Local residents and stakeholders have shared clear and practical ideas to solve the tourism and water problems in Shogran Valley. Their suggestions focus on three main areas: better management, using smart technology, and including the community.

First, most of the participants pointed out that the current management system is not working. Participant 2 suggested that NGOs could do a better job of managing the landscape and water than the current situation. D’Ascenzo et al. (2020) discuss that implementation of best practices in water management for sustainable tourism needs responsibility and collect effort of all stakeholders along with strict policies. As Participant 4 & 7 stated, responsibility is the main concern for ensuring sustainable tourism.

Secondly, there can be a simple, technical solution that might make tourism more progressive, as few participants mentioned that rainwater harvesting could be an option if rainwater storage tanks are constructed at feasible places, then rainwater can be easily collected and would be readily available for tourists and the community during peak tourism season. The government should initiate the maintenance framework to ensure that existing water supply is not affected by leakage. In addition, another participant further illustrated that stakeholders and hotel managers need capacity building for efficient use of water, and water check and balance should be encouraged by the local authority.

Recent research observing the sustainability of Pakistan’s hotel culture reveals that many hotels in Pakistan lack a model that supports environmental and social sustainability. They simply prioritize short-term gains over long-term environmental and community goals (Sajjad et al., 2018). Shogran needs better hotel management,

which has systematic sustainability strategies. Most of these strategies include implementing water conservation measures, waste removal systems, and much needed community engagement programs. When government bodies and natives come and work together, it ensures that these measures are met and tourism leads to a healthy economic growth (Sajjad et al., 2018).

If Shogran Valley has to reach its full potential and build a completely sustainable tourism strategy, then it must follow the principles of environmental management laid out by Muhanna (2006). These principles often include long-term regional planning that helps the land get back on track, as seasonal tourism has hit Shogran's water resources in such a negative way that long-term economic growth is needed. However, this economic growth should come with the preservation of the surrounding environment. Muhanna (2006) states that in order to require and maintain sustainable environmental growth, the region needs efficient resource management with policies that protect the natural environment and engage communities in the planning process. This ensures that tourism does not compromise ecosystems or the quality of life of the local residents. If Shogran Valley adopts these measures, it can develop policies that can reverse the negative impacts.

Lastly, Participant 3 mentioned that over-construction of hotels should be stopped because the water infrastructure must be ensured and properly managed to keep tourism sustainable. Gössling et al. (2011) advise the already water-scarce destinations to invest in proactive resource management, especially with the predicted changes in global precipitation due to climate change. In conclusion, for the sustainable future of tourism in Shogran valley, they merely need mutual working and engaging of local residents, concerning water management departments, NGOs', and government intervention in ensuring water safety and ecological sustainability of the regiond

Conclusion

Tourism growth in the Shogran valley has significantly increased since 2002. It had only three hotels, and now, in 2025, it has 32 hotels. With the passage of time, the water infrastructure may not be developed to meet the demands of big hotels and guest houses. However, the participants illustrated with their entire experience of working in the valley that before the rapid growth of tourism, water was managed perfectly. It has been

justified by the participants that due to limited funds, further water storage plans were not constructed in time. In the valley, for transportation purposes, a few roads are completed, but maintenance of the existing water supply was not included in the plan. The actual problem of the water issue originates from unplanned growth in tourism. In the beginning, there were five major natural springs that had naturally recharged phenomena, but currently the whole tourism industry in Shogran valley relies on a single spring, water supply line, and storage. Whereas the participants highlighted that despite water shortage in peak season a lot of water is wasting through the main water supply line, which needs maintenance. Kaghan Development Authority (KDA) is a tourism management authority working for tourism growth, and unfortunately, it is running out of funds to maintain the water resources of the valley.

In fact, the rapid growth of tourism facilitated more job opportunities and motivated people to change the source of income from agriculture and livestock to the hotel business, but it has also shown the water shortage concern in peak season. From communication with local stakeholders, there seems to be a water shortage conflict because most of the water is utilized by hotel managers and guest houses for tourists' consumption, and there is no availability of water for local farmers and residents during the peak summer season. Hence, it pulls the local people to get water for their families from far away sources from their house which affect their daily life. It also indicates the failure of water management in the study area.

Similarly, a tourism management official of KDA (Kaghan Development Authority) mentioned that the nature-based tourism approach is their top priority and they forwarded their sustainable proposal to enhance and develop existing water resources, create balance in the utilization of resources, and avoid any mismanagement regarding water resources and tourism growth.

Furthermore, the study highlights that there are some feasible plans for sustainable tourism practices. According to the participants' suggestion, gathering water in rainwater harvesting mini dams or storage tanks, replicating the separate water supply lines for both the community and hotels and installing the control valves on the main water supply lines, are some linear ways to ensure water safety. The balance between developing water infrastructure and tourism growth is essential to make the environment sustainable, climate resilient, and to preserve the natural beauty of the

Shogran valley. Possibly, it can be achieved by creating water plans, policies, and regulations, and engaging the NGOs in active participation for implementation and infrastructure development. To sum up, sustainable practices like water management, landscape management, and nature-based tourism can maintain the source of attraction that every tourist finds in Shogran valley. These practices are feasible with practical implementation and mutual coordination of the tourism development department, stakeholders, and the planning commission institution in the country.

Ultimately, in addition to the infrastructure development, the study also highlights how important it is to engage the community when it comes to ensuring long-term water sustainability. With a wide range of awareness campaigns that focus on using water responsibly, sharing resources, and conservation practices which will promote behavioral changes amongst the community. Mostly, it will engage tourism operators, but including local residents in these initiatives can lead to cooperation and overall improved understanding of water scarcity. Therefore, when effective water governance is implemented, it must integrate both awareness and technical improvements, which will lead to lasting results. With these initiatives, tourism sustainability becomes stronger. With proper water governance and community engagement, tourism can flourish and become a greater asset to the area in terms of development and historical relevance.

Recommendation for Future Research

This research may serve as a source guide for future studies on the topic related to water resources management for other destinations like Khagan, Naran, Ansoo Lake, and the Saiful Malook tourist destinations in the region. This study is limited to contextualizing the findings of how tourism growth creates water issues in the valley, where the official ones are the key players in preserving the water resources for sustainable tourism. In future research, depletion of water resources, protection of water resources, community business stance on tourism, impacts of tourism on environments, livestock and aquatic animals, and economic and governance dimensions could be prioritized. For long-term sustainability in the Shogran valley, I would recommend that future researchers conduct long-term studies to assess the current impacts that have deteriorated the water resources of the valley.

Additionally, future researchers could plan to organize a practical survey to assess valuable insights into their perception and preferences. The community engagement, getting feedback from NGOs working on concerned projects, and collectively getting concerned departments to control and manage the resources can be mutually assessed from a research perspective. The existing tourism policies and regulations may be further filtered to indicate the gaps. It provides a view to structure the policies recommended for sustainable tourism.

Limitations of the study

The thesis contains a few limitations, including that it is qualitative in nature, which gives subjectivity and the participant's responses, individual perceptions, and experiences. In fact, it is limited to the small Shogran valley and does not provide a broader view of the entire region. Qualitative data is restricted, and statistical analysis cannot be framed. Findings of the study may not be part of the broader context due to a lack of statistical data.

The study is based on information collected from interviews and secondary data sources. The data is collected from semi-structured interviews of eight participants due to time and financial constraints. A larger sample size could have different results and improved findings. This might not cover the perspectives of all the stakeholders, different age groups, tourists, and other planning institutions. Additionally, the study of research comprises geographically tourism-led water scarcity in the Shogran valley.

Another limitation comes from reaching out to a different person who has more experience living in the region of the study. Being able to capture photos through someone else was proven to be a challenge, as the student was not trained to take such photos of the environment.

Tourism growth and its impacts could have variation over a longer period, possibly affecting the pertinent findings over time. This temporal constraint of data collection shows a limitation. The dynamic nature of the tourism industry means that findings may become outdated with the change of new policies and development that influence tourism in the research area. Finally, this thesis is conducted only by navigating the tourism growth that has created water shortage in Shogran valley and its impacts on

water resources and community livelihood, and some of the sustainable practices with recommendations are encouraged for implementation.

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List of Appendices

Participants Information

Serial No.	Name of Participants	Age	Gender	Profession
1	Zameer Ahmed	67	Male	Senior Water Management Consultant World Bank Project
2	Tahir Akram	34	Male	Agricultural Engineer & Water Management Consultant World Bank Project
3	Hamza Afzal	28	Male	Tourism Stakeholder / Tourism operator
4	Fawad Khan	28	Male	Local Resident
5	Muhammad Adil	30	Male	Local Resident
6	Khalid Mehmood	49	Male	Local Resident
7	Liaqat Shah	47	Male	Tourism Stakeholder / Hotel Manager
8	Asad Khan	31	Male	Deputy Director KDA

Semi-Structured Interview guide questions

1. Can you briefly introduce yourself?
2. How has tourism activity in Shogran Valley changed over the past few years?

3. In your opinion, how has this growth in tourism affected the availability and quality of local water resources?
4. Do you experience more frequent or severe water shortages during the tourist season compared to other times of the year?
5. Who is primarily responsible for managing and distributing water in your area? Do you think the current water management system is fair and effective? Why or why not?
6. Have there been any conflicts or tensions between local residents and tourism operators on overwater usage?
7. What role, if any, do local authorities or NGOs play in addressing water scarcity or tourism-related issues?
8. How has water scarcity influenced your household's daily life and livelihood activities?
9. Do you think tourism has provided economic benefits to local people that outweigh its environmental costs (like water shortages)?
10. How do women and children in your community experience or cope with water shortages compared to men?
11. What strategies do households or businesses use to cope with water shortages during peak tourism months?
12. In your opinion, what measures or policies should be adopted to ensure a sustainable balance between tourism growth and water resource protection in Shogran Valley?

Semi-structured interview transcripts

Participant: 1, Water Management Authority Official

1. Can you briefly introduce yourself?

Yes, I am Zameer Ahmed and currently I am appointed to the Water Management Department as a water consultant in Shogran region district Mansehra. I worked as a water management consultant from 2002-2019 and retired. Then, I joined as a water management consultant at National Improvement Program from 2019-2023. I am 67 years old.

2. How has tourism activity in Shogran Valley changed over the past few years?

Over the years, I have seen a drastic change in tourism from 2002 to 2025. Shogran had only 3 hotels in 2002, and currently it has 32 hotels that really contributed to the water shortage because the government water supply line that carries 11 to 12 LPS discharge, and the current storage capacity is insufficient for both hotels and the community.

3. In your opinion, how has this growth in tourism affected the availability and quality of local water resources?

I think because of this, water has become scarce. Tourism amplifies the problem because tourists overuse water and locals sometimes have to bring water from far away. Tourism creates economic opportunity, but it also creates pressure on water resources. Now, water sources are shrinking but inflow of tourist is increasing.

4. Do you experience more frequent or severe water shortages during the tourist season compared to other times of the year?

During the tourist season, water shortage becomes severe. Around 70% of locals face serious water issue as the full supply line is used by the hotels and all the hotels are at the upstream of Shogran valley. Even in one whole day, sometimes they cannot fill one can or gallon of water. We asked KDA, but they don't have funds.

5. Who is primarily responsible for managing and distributing water in your area?

Do you think the current water management system is fair and effective? Why or why not?

KDA (Kaghan Development Authority) is responsible for the water distribution and management. I don't think they are effective, because they don't have funds.

6. Have there been any conflicts or tensions between local residents and tourism operators on overwater usage?

Yes, there are frequent conflicts due to water use. Upstream communities use most of the water, while downstream locals suffer shortages. Water usage needs to be properly managed.

7. What role, if any, do local authorities or NGOs play in addressing water scarcity or tourism-related issues?

Around 2005 onwards we saw organizations like NRSP, KPKRP, UNICEF and others were working. But at present, I think NGOs are not really playing an active role, therefore such an issue persists.

8. How has water scarcity influenced your household's daily life and livelihood activities?

Usually women spend around 4–5 hours a day collecting water. They have been doing this for many years — more than ten years in some cases. It is very tiring and affects their daily lives as it is affecting their daily routine.

9. Do you think tourism has provided economic benefits to local people that outweigh its environmental costs (like water shortages)?

In my opinion, local people want tourist inflow, which means they are willing to bear the burden of this issue, but they want tourism to keep growing because tourism is a source of income. Locals gave some applications to water authorities to resolve this issue especially during summer. Agricultural land is also affected due to water shortage as in summer season land needs more water for irrigation.

10. How do women and children in your community experience or cope with water shortages compared to men?

In case of water shortage in peak tourist season, women used to bring water from distant places where the source is located. Mostly women accompany children those are elder than 10 years to bring gallons of water.

11. What strategies do households or businesses use to cope with water shortages during peak tourism months?

I think water and tourism should be managed together. Authorities should take more responsibility, repair infrastructure, and plan before the tourist season. Rainwater harvesting and storage could also help both farmers and local residents.

12. In your opinion, what measures or policies should be adopted to ensure a sustainable balance between tourism growth and water resource protection in Shogran Valley?

I think water management department should build mini dams and ensure proper water management. More pipelines for the water supply should be installed from the water sources for smooth availability during peak season.

Participant: 2, Water Management Consultant

1. Can you briefly introduce yourself?

My name is Tahir Akram; my age is 34 years. I did Agricultural Engineering at the University of Engineering and Technology Peshawar. I am working as a Field engineer with Water Management department. We deal with the different projects regarding water conservancy and make storage tanks/ponds for efficient agriculture.

2. How has tourism activity in Shogran Valley changed over the past few years?

Population is increasing, and tourist inflow has also been rising over the past few years. This affects the local environment, especially natural water resources.

3. In your opinion, how has this growth in tourism affected the availability and quality of local water resources?

Last few years, there has been an increase in population, so I have noticed the inflow of tourists in the Shogran, and in peak season, it causes water shortage, and most of the supply lines are not fit for drinking purposes because they have been polluted due to mismanagement of waste.

4. Do you experience more frequent or severe water shortages during the tourist season compared to other times of the year?

Yes, during peak tourist season there is frequent water interruption because water consumption also increases. Moreover, locals also manipulate natural streams and ponds (water sources) by letting their livestock animals free into these ponds. So, it also alters the situation.

5. Who is primarily responsible for managing and distributing water in your area?

Do you think the current water management system is fair and effective? Why or why not?

Public health office does not pay any serious attention to Shogran valley due to it being a remote area. Tourism stakeholders (hotel managers) are least interested in maintaining the main water supply line, but they have frequent water conflicts among themselves. I think NGOs can play a better role in managing the resources and in the off-season, whereas the rainwater harvesting should be proposed to overcome the water issue in peak season.

6. Have there been any conflicts or tensions between local residents and tourism operators on overwater usage?

Tourism stakeholders and locals have frequent disputes sometimes twice a week mostly related to water and resource sharing. Locals mostly claim that hotel owners overuse water without the mutual willingness.

7. What role, if any, do local authorities or NGOs play in addressing water scarcity or tourism-related issues?

I think NGOs and government officials could help manage the landscape by enforcing strict laws on hotels and tourists. Priority should always be given to local communities first, then tourists.

8. How has water scarcity influenced your household's daily life and livelihood activities?

I do not have much exposure to the community livelihood improvement, but I have seen that the big investors from cities are investing money in hotels, and locals have more job opportunities.”

9. Do you think tourism has provided economic benefits to local people that outweigh its environmental costs (like water shortages)?

Sir, I think tourism definitely has financial advantages because it creates job opportunities. But it also has serious negative effects. It manipulates local resources and increases environmental costs —costs that locals pay more than the tourists who benefit.

10. How do women and children in your community experience or cope with water shortages compared to men?

Usually, women and children often walk far distances to collect water, especially in hilly areas. This becomes even more difficult during heavy tourist seasons when shortages increase.

11. What strategies do households or businesses use to cope with water shortages during peak tourism months?

I suggest that business community must use the water resources in such a way that it should not affect the local community. I mean to say that they half to

manage in such a way that this problem will not affect the local community as well as the tourism industry.

12. In your opinion, what measures or policies should be adopted to ensure a sustainable balance between tourism growth and water resource protection in Shogran Valley?

I think government should help stakeholders to build such structures that they can conserve water during rainy season and can be used during peak season.

Participant: 3, Tourism Stakeholder (Tourism Operator)

1. Can you briefly introduce yourself?

My name is Hamza Afzal, and I am 28 years old. I am basically from Balakot. I have been working as a tourism operator/facilitator in Shogran valley for the past 5 years. I provide services regarding hotel booking and hotel management etc.

2. How has tourism activity in Shogran Valley changed over the past few years?

First, I would like to tell you that Shogran is the most active destination for tourists. From the past few years, there are a lot of changes takes place in this area. If I can tell you briefly, like too much construction, especially of hotels. On other hand, road facilities are also getting better. Tourist flow increases, we can say number of entries has increased.

3. In your opinion, how has this growth in tourism affected the availability and quality of local water resources?

First of all, I would like to tell you that climate change has vast effect on the region. From the past 10 years, glaciers melt a lot. I think reason behind this change is over-construction mainly of hotels. Therefore, water resources are shrinking.

4. Do you experience more frequent or severe water shortages during the tourist season compared to other times of the year?

Broadly if I can say that tourism has affected the water resources. Because over construction shrink green areas and natural springs. Usually, the issue arises in peak season from March till September.

5. Who is primarily responsible for managing and distributing water in your area?

Do you think the current water management system is fair and effective? Why or why not?

Water management department handles the distribution of water in the area. I think as a stakeholder the issues which we addressed to the authorities have not been resolved because authorities lack funds.

6. Have there been any conflicts or tensions between local residents and tourism operators on overwater usage?

In my view, hotels are the main consumers, therefore locals are not getting the required water supply. So, some conflicts remain between locals and stakeholders because most of the consumption is done by tourists. Moreover, there is only one storage tank from which the locals and stakeholders are getting water.

7. What role, if any, do local authorities or NGOs play in addressing water scarcity or tourism-related issues?

NGOs and local authorities can play a better role by educating the locals about water conservation and storage. I think local bodies can make more water storage tanks.

8. How has water scarcity influenced your household's daily life and livelihood activities?

I think water scarcity is affecting the local bodies more as hotels consume most of the resources. So, it is difficult for the locals to generate income if they indulge in the basic need of life.

9. Do you think tourism has provided economic benefits to local people that outweigh its environmental costs (like water shortages)?

Topologically Shogran is a tough terrain, but now roads are smooth, so it is more accessible now, as traveling is easy. I think due to tourism infrastructure developed, but if I talk about water resources, they are declining because hotels sewage/drainage and kitchen waste is increasing and affecting the climate.

10. How do women and children in your community experience or cope with water shortages compared to men?

I have seen a major change. Over the last decade, most of the main springs and streams, which we call 'Khurr,' have dried up. Now, they've shrunk, due to climate change, and only one spring is still. A pipe was installed about 12 kilometers away to bring that water, but its flow gets extremely low in the summer. There is also a lot of leakage from the pipe. This situation really affects the local community especially children and women which now have to carry their drinking water on their heads or by using donkey carts.”

11. What strategies do households or businesses use to cope with water shortages during peak tourism months?

I think business owners are earning enough so that they can make water storage tanks for themselves. Rainwater could be harvested.

12. In your opinion, what measures or policies should be adopted to ensure a sustainable balance between tourism growth and water resource protection in Shogran Valley?

I think government should not construct more hotels due to unavailability of resources. Green area should be balanced; drainage system should be managed properly as no one is managing it.

Participant: 4, Local Resident

1. Can you briefly introduce yourself?

My name is Fawad Khan. I am a software engineer and I do freelance. My age is 28 and I am from Shogran Valley.

2. How has tourism activity in Shogran Valley changed over the past few years?

With the passage of time, tourism has increased a lot in Shogran valley, and it is increasing every year instead of decreasing. From the past few years, I saw overcrowding and over tourism which brought problems as well.

3. In your opinion, how has this growth in tourism affected the availability and quality of local water resources?

I think tourism growth has definitely brought problems. One of the biggest issues is water. Because of overcrowding and over-tourism, water resources are becoming strained. There is less water available for local residents, and sometimes even basic needs are not fully met.

4. Do you experience more frequent or severe water shortages during the tourist season compared to other times of the year?

During peak tourist months like June, July, and August, water availability becomes very low — sometimes almost unavailable, even for households. People also don't have proper awareness about water usage. Hotels are the main consumers. They more or less have a monopoly over water because they control most of the pipelines. At the same time, the number of hotels keeps increasing. Their main target is tourists, not residents.

5. Who is primarily responsible for managing and distributing water in your area?

Do you think the current water management system is fair and effective? Why or why not?

The KDA (Kaghan Development Authority) is the main body for governance. But I think the water management system is old, and not very efficient. A lot of water is wasted instead of being properly utilized.

6. Have there been any conflicts or tensions between local residents and tourism operators on overwater usage?

Yes, Conflicts usually arise during peak tourist season. Hotels use too much water. Tourists put additional pressure on water resources. Local people sometimes strive for access when there is not enough.

7. What role, if any, do local authorities or NGOs play in addressing water scarcity or tourism-related issues?

Honestly, I don't think NGOs or authorities are really playing a role. If they were active, then water would not be such a serious issue.

8. How has water scarcity influenced your household's daily life and livelihood activities?

Yes, it is affecting our livelihood as we have agricultural lands, and agriculture is affected because yields are lower when water is not available at the right time. Fields are becoming barren gradually. Household life is also impacted as we cannot do most of the water related jobs/tasks during peak season.

9. Do you think tourism has provided economic benefits to local people that outweigh its environmental costs (like water shortages)?

In my opinion although, tourism has advantages — there is income and businesses are growing — but resources are becoming scarce. Water is very important because it is tied to life. So even though tourism brings money, the pressure on water is a cost.

10. How do women and children in your community experience or cope with water shortages compared to men?

Children sometimes have to bring water from far away. When there is no water supply, schools are affected, especially sports and activities. Homes are affected as cleanliness becomes difficult for women because they are mostly dealing with the household chores, and this creates health risks.

11. What strategies do households or businesses use to cope with water shortages during peak tourism months?

I think tourism helps in earning money, but awareness is lacking. Tourists should be educated about waste management. Being responsible is important. I suggest tourism should be sustainable. The government should use alternative waste management methods. Long-term planning is needed.

12. In your opinion, what measures or policies should be adopted to ensure a sustainable balance between tourism growth and water resource protection in Shogran Valley?

I think there is a lot of wastage in hotels, usually in their kitchens, so we have to make them aware that they should ensure minimal water wastage. I think we should adopt new technological ways to store water.

Participant: 5, Local Resident

1. Can you briefly introduce yourself?

My name is Muhammad Adil, and my age is 30 years. I am Shogran resident.

2. How has tourism activity in Shogran Valley changed over the past few years?

I think from 2021 onwards there was more tourism compared to before how it was. All tourist patterns have changed since then.

3. In your opinion, how has this growth in tourism affected the availability and quality of local water resources?

As I mentioned, increase in tourist flow means more demand for water. Therefore, to fulfill this demand, hotels management uses most of it as now tourism is not confined to specific months, it remains throughout the year.

4. Do you experience more frequent or severe water shortages during the tourist season compared to other times of the year?

Definitely, this growth has resulted in water shortages, because before tourism boom water availability was fine, but now there is always water issue during the peak season.

5. Who is primarily responsible for managing and distributing water in your area?

Do you think the current water management system is fair and effective? Why or why not?

If I am not wrong, Kaghan Development Authority (KDA) is responsible for the water administration. Few NGOs also worked for some time. I think these bodies are not working effectively due to improper check and balance system.

6. Have there been any conflicts or tensions between local residents and tourism operators on overwater usage?

We are poor people; hotel owners have power and resources. They avail themselves of most of the water during the season. There are frequent conflicts over it, and we gave applications to the government as well.

7. What role, if any, do local authorities or NGOs play in addressing water scarcity or tourism-related issues?

I think authorities should ensure proper storage management. NGOs can play a role, but practically NGOs are not doing anything related to this issue.

8. How has water scarcity influenced your household's daily life and livelihood activities?

Tourism gives us benefit as it is a source of livelihood for us, but daily life is being affected due to water scarcity. As I told before that hotel owners use power over locals. It is difficult to live like this because we address the issue to authorities and for time being they said they will sort out this issue, but practically they don't take any action.

9. Do you think tourism has provided economic benefits to local people that outweigh its environmental costs (like water shortages)?

Definitely there is economic benefit, but it also has economic costs. I think the loss is more, because there is no proper management. If tourism is managed properly then there would be an equilibrium, but right now there is no equilibrium.

10. How do women and children in your community experience or cope with water shortages compared to men?

It's a very good question, as you know men are mostly out of home for work purposes, therefore mostly women and children face many difficulties, especially when there is no water supply during peak season. They gather water from far-away springs.

11. What strategies do households or businesses use to cope with water shortages during peak tourism months?

I think hoteliers have monopoly, but they also need more water as demand rises during tourist season. So, in my point of view, there should be more storage tanks.

12. In your opinion, what measures or policies should be adopted to ensure a sustainable balance between tourism growth and water resource protection in Shogran Valley?

I think governing authorities are aware of the tourism growth so they should properly manage the existing resources. Avoid waste of water. Most

importantly, I think tourist inflow should not go beyond the capacity of the Shogran, as it causes resource shrinkage.

Participant: 6, Local Resident (Farmer)

1. Can you briefly introduce yourself?

My name is Khalid Mehmood, and my age is 49 years. I am local resident of Shogran valley. I am not doing any job.

2. How has tourism activity in Shogran Valley changed over the past few years?

I think there is a huge surge in tourism. This increase is due to social media and promotion. Tourism activities have grown rapidly in recent years.

3. In your opinion, how has this growth in tourism affected the availability and quality of local water resources?

I think there is a significant difference compared to the past. Earlier, the situation was better, but now shortages occur more often. Tourism has disturbed environmental balance.

4. Do you experience more frequent or severe water shortages during the tourist season compared to other times of the year?

Definitely during tourist season, usage of water increases, resulting in water shortage very often.

5. Who is primarily responsible for managing and distributing water in your area?

Do you think the current water management system is fair and effective?

Why or why not?

Water management department and Tehsil Municipal Office deal with water management. I think poor management is the main reason for these problems. Authorities have failed to control tourism properly. Environmental impacts should be checked and balanced.

6. Have there been any conflicts or tensions between local residents and tourism operators on overwater usage?

Yes, there is always conflict, but the local people cannot raise their voices because the hotel owners and tourism stakeholders are powerful and we (locals) have to bear it. I think whosoever is earning money should benefit people as well so that they will not face such type of hurdles.

7. What role, if any, do local authorities or NGOs play in addressing water scarcity or tourism-related issues?

I think if the local authorities do their sincere job and everyone makes their efforts this problem can be resolved, but the governing bodies usually take some steps when there is an audit or inspection. Afterwards, the situation becomes the same. I think they have to manage this on permanent basis.

8. How has water scarcity influenced your household's daily life and livelihood activities?

I think tourism is good, but it causes privacy breaches. For example, tourists camp anywhere instead of at specific locations, sometimes even near to walking tracks, which creates problems. Women are especially affected in local areas, as in our region females often work in agriculture lands.

9. Do you think tourism has provided economic benefits to local people that outweigh its environmental costs (like water shortages)?

I think only few people are doing tourism business but mostly are not involved in it. Mostly are outsiders who are stakeholders. Therefore, government should use alternative means to help locals to get rid of this issue.

10. How do women and children in your community experience or cope with water shortages compared to men?

In the summer season, let's suppose there is unavailability of water supply, so women have to bring it from distant places. Tourists often camp near to walking paths, so females feeling hesitant as it causes privacy breach.

11. What strategies do households or businesses use to cope with water shortages during peak tourism months?

I think tourists should not be free to go everywhere. They should be restricted to specific places to visit. Uncontrolled tourism creates damage. It affects our culture as well.

12. In your opinion, what measures or policies should be adopted to ensure a sustainable balance between tourism growth and water resource protection in Shogran Valley?

I think tourism helps in earning money, but awareness is lacking. Tourists should be educated about waste management. Being responsible is important. I suggest tourism should be sustainable. The government should use alternative waste management methods. Long-term planning is needed.

Participant: 7, Tourism stakeholder (Hotel Manager)

1. Can you briefly introduce yourself?

I am Syed Liaqat Hussain Shah, and I have been Managing Manchee Breeze Hotel since from the past 12 years and I am 47 years old.

2. How has tourism activity in Shogran Valley changed over the past few years?

Sir, from the past two years, by the end of July, tourists start increasing. Before, lodging was seasonal as hotels were closed during winters, but now hotels stay open throughout the year.

3. In your opinion, how has this growth in tourism affected the availability and quality of local water resources?

In my view, from the last four to five years, water issues are there. There is only one water line during the season and water issue is a lot due to more tourists and rising water need.

4. Do you experience more frequent or severe water shortages during the tourist season compared to other times of the year?

As I said earlier, eventhough water issue prevails, but we have to arrange water for tourists because tourists are our priority. Mostly managers are locals and we inform tourists to use only the needed water and not waste it, but we don't have any special instructions written at the consumption points.

5. Who is primarily responsible for managing and distributing water in your area?

Do you think the current water management system is fair and effective? Why or why not?

KDA is responsible for managing these issues and I think KDA is working on it. However, I feel the resource is shrinking while the demand is increasing.

6. Have there been any conflicts or tensions between local residents and tourism operators on overwater usage?

I don't think so that tourism has created conflict between locals and hotels. Many locals are involved in tourism-related jobs, so their main focus is on tourism rather than conflict.

7. What role, if any, do local authorities or NGOs play in addressing water scarcity or tourism-related issues?

I think NGOs could play a stronger role in addressing water concerns, for example by helping construct additional water supply lines. However, I feel that overall organization in Shogran is weak and not properly structured.

8. How has water scarcity influenced your household's daily life and livelihood activities?

Sir, there is only one storage tank exists in the area. Women often have to carry water and may walk three to four hours to reach the water source. I think daily wage workers are affected because they sometimes lose work time to collect water from distant source. I think for hotels, the situation is financially manageable, as water does not add too much cost.

9. Do you think tourism has provided economic benefits to local people that outweigh its environmental costs (like water shortages)?

I think tourism has more economic benefits as compared to its effect on environment as it creates jobs in construction and hospitality, but there is no proper waste management like there are few bins. Kaghan Development Authority has not provided those bins at most of the points. So, tourists through waste in surroundings causing environmental damage.

10. How do women and children in your community experience or cope with water shortages compared to men?

I think this situation is affecting both men and women, but women have more burden. Men sometimes have to leave daily wage work to manage water, and children are also affected as sometimes they miss school to help bring water.

11. What strategies do households or businesses use to cope with water shortages during peak tourism months?

In my opinion, firstly it is the responsibility of the government to resolve this issue. Secondly, we (stakeholders) and locals have to manage this issue collectively by making a social team to resolve this issue when arise, hotel owners can contribute financially to support their work.

12. In your opinion, what measures or policies should be adopted to ensure a sustainable balance between tourism growth and water resource protection in Shogran Valley?

I think there is no issue to the tourists and hotel owners. Tourists are getting all the facilities. It's a peaceful site; people are good and loving. Just there is a water issue in few months. So, authorities should resolve this issue by making some plans.

Participant: 8, Tourism Government Official (Kaghan Development Authority, Deputy Director)

1. Can you briefly introduce yourself?

I am Asad Khan, Deputy Director at Kaghan Development Authority (KDA). I am 31 years old.

2. How has tourism activity in Shogran Valley changed over the past few years?

We have an increasing population, almost 1.9% per year, nationally. So, it has directly impact like other sectors, it has direct impact on tourism as well. So naturally, we have special inclination towards nature-based tourism. That's like hills, mountains, rivers and flora and fauna and forest. So, due to the exponential increase in the population, the tourism has increased along with the provided services. The government of KPK is providing services to further promote and attract tourism. Like in short, in the last couple of years, we have developed shoreline roads. Before it was not traversable roads for normal two-wheeled vehicles. Now two-wheeled vehicles can easily access the land in snow. Plus,

we have increased the winter tourism as well. We have deployed machinery and resources, and we've legitimately cleared the roads after the snowfall. So, government is putting its best to facilitate and providing maximum services to extend the tourism and the other factor that is leading to this exponential growth in tourism is that population. But it's due to the incentivization and attraction of government of KPK that tourism has witnessed significant growth in last couple of years.

3. In your opinion, how has this growth in tourism affected the availability and quality of local water resources?

Actually, that's a very interesting question. Such an issue never reported neither there is any strain on water resources. Though we might face a bit shortage of water but that doesn't shrink our capability to extend clean drinking water to tourists or local population. So, No, not at all. There is no such. We have not received any reports and there is no official issue of any such shortage. Though we have to address it sustainably, we have put our proposals and schemes and projects for the approval of provincial government and provincial government is fully committed to all of it and hopefully within the coming seasons we will initiate it.

4. Do you experience more frequent or severe water shortages during the tourist season compared to other times of the year?

First of all, I think increasing population led the growth of tourism in Shogran, but we focus on nature-based tourism. We the winter enhance tourism and Government is providing support to expand tourism and there is no direct exponential effect, but water issue prevails and its sustainability also in our radar during tourist season. We don't have fiscal budget, but we are concerned about water sustainability and forwarded our file to higher government for implementation.

5. Who is primarily responsible for managing and distributing water in your area?

**Do you think the current water management system is fair and effective?
Why or why not?**

Primarily on a professional level, we have Public Health Engineering that are responsible for drinking water supply and KDA as well. I think management is effective so far. There is no lapse in it and tourism industry is growing in this area.

6. Have there been any conflicts or tensions between local residents and tourism operators on overwater usage?

No, not at all. Neither on water issue in Shogran, nor anywhere in the valley from Balakot to Babusar. I have never received any report on conflict of water between hotel and tourist operator or even the tourist.

7. What role, if any, do local authorities or NGOs play in addressing water scarcity or tourism-related issues?

Yes, we have a case study that once a private NGO implemented a water supply project in Naran and our government has sponsored to them as well. So yes, we have that case study. It was, I think, in 2013.

8. How has water scarcity influenced your household's daily life and livelihood activities?

Yes, it affects all aspects of life. Especially when it comes to hygiene, cleaning, drinking facilities and washing. So, I think, I would say, without water, there is no life. I think human existence on earth is primarily due to water.

9. Do you think tourism has provided economic benefits to local people that outweigh its environmental costs (like water shortages)?

Yes, it's beneficial for local communities as well, because it developed the area and it brought awareness. It actually elevated the social and economic profile of the local communities. But it has risks as well, like it's affecting the nature.

10. How do women and children in your community experience or cope with water shortages compared to men?

Broadly, I had never heard any such case that how women are dealing with it. From my past experience of Kashmir, I would rather suggest that in case of absence of water, the women folk of Kashmir go and bring water on in jars and mugs from nearby streams. And comparatively in Shogran, I would rather say, that trend doesn't exist or very low, but streams/sources are but far away.

11. What strategies do households or businesses use to cope with water shortages during peak tourism months?

I think there should be awareness, so tourists mostly don't go around. We should limit the warm water supply to certain house instead of through out the day. Avoid the overuse of water.

12. In your opinion, what measures or policies should be adopted to ensure a sustainable balance between tourism growth and water resource protection in Shogran Valley?

Like, we cannot stop someone who is coming for tourism like in free economies, but there should be broader awareness and checks to reduce the exploitation of resources. For example, if there are water resources where people are coming in, they should not overuse it. Second, they should not contaminate it. Third, they should contribute with government bodies to effectively utilise resources and support it. Locals should be concerned about the resources. So, this is like multi-prolonged strategy and required willpower of both, from the private sector and the government.