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Climate Change and the Erosion of Traditional Practices: A Case Study of Gilgit-Baltistan

Syeda Sakina Mosvi[1], Syed Arif[2], Zobia Baig[3], Huzaifa Khan[4], Aniza Abid[5], Wajahat Ali[6], Zeeshan Abbas[7]

[1] Research Scholar, Department of Anthropology, Bahria university Islamabad, Pakistan sakinamosvi111@gmail.com
[2] Department of Agro industry and Environment Islamia University of Bahawalpur, Pakistan
[3] Research Scholar, Department of Anthropology, bahria University Islamabad, Pakistan
[4] Research Scholar, Department of Agro Industry and Environmental Sciences, Islamia university of Bahawalpur, Pakistan
[5] Research Scholar, Department of Agro Industry and Environmental Science, The Islamia University of Bahawalpur, Pakistan
[6] Research Scholar, Department of Agro industry and environment Islamia university of Bahawalpur
[7] Department of Educational Planning and Management

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Abstract
This paper examines the local responses towards climate change that impacting the traditional knowledge and practices in Gilgit Baltistan. Gilgit Baltistan is one of the finest tourist places of Pakistan where thousands of people from all across Pakistan come to enjoy their trips. It is also a big source of economy for the country if it maintains the region's infrastructure. But unfortunately people of Gilgit Baltistan have endured a lot of consequence due to climate change in the region. Hundreds of people have lost their lives and property due to melting of glaciers, drought and flood. According to this reason this research is conducted in the area to analyze the local people of Gilgit Baltistan cope up the climate change in their local ways. And how they maintain their traditional practices in the concurrent time. As well as it examines that how its traditional knowledge used to preserve their cultural heritage. In addition, this study also compares the old cultural knowledge with the new way of solving the climatic issues. This study also examine the old pattern has been modified and new innovation has been brought. It also highlights whether their traditional and cultural knowledge has been effective for handling climatic change for the survival for the local people or not. This study also finds out by the means of local people are carrying out their cultural knowledge with the passage of time to their next generation. In this study different techniques and method have been used such as rapport building, participant observation, in depth interview, focus group discussion, interview guide, and field note.

Keywords: climate change, traditional knowledge, cultural heritage, traditional practices, innovation.

Introduction

Gilgit Baltistan is one of most vulnerable regions to climate change impacts. Climate change refers to change in temperatures and weather patterns, these changes are defined below in comprehensively. Climate change is a long-term shift in temperatures and weather. climate change may be natural, but many human activities have been the main driver of climate change, because of air pollution, industries and other many technologies which produces heat-trapping gases. "The evidence for rapid climate change now seems overwhelming. Global temperatures are predicted to rise by up to 4 °C by 2100, with associated alterations in precipitation patterns. Assessing the consequences for biodiversity, and how they might be mitigated, is a Grand Challenge in ecology" (Thuiller & w, 2007). These changes may be natural, such as variation in the solar circle. Since the 1800, human activities have been the main driver of climate change. Primarily due to burning of fossil fuels like coal, oil and gases. Some of the impacts of climate change have been observed in Gilgit Baltistan some of the world's largest glaciers outside the Polar Regions. There glaciers are rapidly retreating because of rising temperatures. 'Climate is long term pattern of weather in particular area. Weather can change from hour to hour, day to day, month to month, year to year. Climate change: is a long-term change in temperature, pressure or wind. Climate change can be due to natural forcing or can be human induced' (GUTERRES, 20 March 2023). Which is causing the loss of fresh water to resources and threatening the livelihood of local communities. 'In order to effectively inform planning and practice, socio-economic hazards stemming from a variety of emission scenarios need to be better understood and quantified, according to South Africa's 2011 national policy statement on climate change. The long term adaptation Scenarios (LTAS) project was commissioned by the National Department of Environmental Affairs in 2013 to try to solve the issue' (Ziervogel, New, & Midgley, 2014). Changing precipitation patterns which are leading to increase frequency and intensity of extreme weather events such as floods, landslides and droughts. Climate change is also leading to the loss of biodiversity in the region. Rising temperature are causing changes in the timing of flowering and fruiting of plants which can disturb the food chain. Although there is still a great deal of uncertainty regarding the rates of change that can be anticipated, it is obvious that these changes will increasingly show up in significant and visible ways, such as changes in temperature and precipitation extremes, reductions in the extent of seasonal and perennial snow and ice and sea level rise. It is now conceivable that anthropogenic climate change will last for many centuries. With regards to climate, we are stepping into the unknown, and the effects could be quite upsetting' (Kar & Trenberth, 2023). Agriculture is the main source livelihood for people of Gilgit Baltistan and climate change is causing changes in temperature and rainfall patterns which leading to reduced crops yields and affecting food security in the region. Water scarcity is already a major issue in Gilgit Baltistan and climate change is exacerbating the problem. Glacier melt water is an important source of freshwater in the region and the loss of glaciers is reducing the availability of this resources. Overall due to climate change is having significant impacts on the environment and people of Gilgit Baltistan and urgent action is needed to mitigate these impacts and build resistance and the region. On the planet every people are affected by climate change. Natural disaster cutting children, people, off from nutritious food and safe water. Due to which our environment is going to destroy safe shelter, health and food. Greenhouse gas emission deforestation and other hazardous practices harming our environment. The UN frame work convention on climate change. The UN family is the one who are at the fore front for saving our planet. In 1992 the earth summit produces the UN frame work convention on climate change (UNFCC) as a first who addressing the climate change problem.in 197 countries that have conform the convention or parties' convention. The aim of convention is to prevent dangerous human interference with the climate system. Climate is the long term- pattern of

weathering a particular area weather can change from hour to hour ,day to day , month to month or even year to year. A regions weather pattern usually tracked for at least 30 years are considered its climate Pakistan has faced terrible floods, droughts, and stroms in recent years that have killed and displaced thousands, destroyed livelihoods, and injured infrastructure. Climate change raises the prospect that these and other natural hazards will increase in occurrence and harshness in the coming decades a stark notice that Pakistan is one of the country's most helpless to the effects of climate change. In the last 50 years, the annual mean temperature in Pakistan has increased by roughly 0.5°C. The number of heat wave days per year has increased nearly five-fold in the last 30 years. Annual rain has historically shown high variability but has somewhat increased in the last 50 years. Sea level along the Karachi coast has risen around 10 cm in the last century' (Rabani, 2017).

Traditional knowledge:

Traditional knowledge refers to knowledge, practices, and beliefs that have been passed down through generations within a particular culture or community. This type of knowledge is typically based on experience and observation and is often tied to a specific environment, such as knowledge of traditional medicine, agriculture, or natural resource management. Traditional knowledge is often transmitted orally or through demonstration, and it is closely tied to the cultural and social context in which it is practiced. It is often deeply connected to the land and the natural environment, and it reflects the values and beliefs of the community in which it is found. Traditional knowledge is often recognized as an important resource for sustainable development and environmental conservation, and it is increasingly being valued by policymakers, scientists, and others as a source of insight and expertise. "Knowledge systems and practices of Indigenous peoples are recognized as a 'major resource' for climate change adaptation" (Petzold, Andrews, Ford, & Hedema, 2020). However, it is also important to recognize the importance of respecting the intellectual property rights of traditional knowledge holders and ensuring that their knowledge is not exploited or appropriated without their consent.

Herbs:

Gilgit-Baltistan region is full of wonders of nature. Snowcapped peaks, lush pastures and fresh water springs at one hand made it more gorgeous area for the tourists; on the other side, it produces natural pastures, forest which is full of medicinal herbs used by the local community for a healthy lifestyle.

Central Arguments:

The aim of the present study is to find out the local practices and the use of traditional knowledge for the survival of mountainous communities. Climate change is very commonly perceived problem around the world, but here in Pakistan it is very dangerous because of lack of equipment and resources to overcome its impacts. It was found that due to high rise in temperature and the lack of natural resources' management of Pakistan is facing very disastrous and rapid rise in the climatic change. North of Pakistan is famous for its beauty but also it is the source of fresh water, the whole reservoir is upon the North West corner of the country. This rise in temperature at one hand is disturbing the natural course; on the other hand, it is creating new troublesome challenges for the people living in these mountains.

Methodology:

This study was conducted while using qualitative approach accompanied with Anthropological lens). Throughout the entire process of this study, concepts were created, adjusted, tested, and then tested again in the light of the observations. Because it was challenging to conclude the qualitative analysis, concepts were developed, modified, tested, and retested throughout the

process to ensure they met the objectives of this investigation. Over the course of 6 months, I had extensive interactions with respondents and gathered primary data. I lived with the residents of these places and visited them frequently throughout this time. I made visits to mosque, school, allied health facility, and the education department in order to deepen my comprehension of the study's numerous topics and sub themes and, as a result, gather as much real information as I could through the use of a variety of research instruments. Similarly, the methods like participant observation, interview guide, rapport building, informal interviews, key informant, case study method and focus group discussion are the mainly used tools and techniques to cross check the data.

Literature Review:

To deal with environmental challenges and climate catastrophes, the local community has always produced solutions based on their cognitive capacities, competence and locally informed skills. This knowledge alludes to indigenous cultures' knowledge, skills, beliefs, value system, normative structures, behavioral patterns and practices at a certain time and location (Musimwa and Chapeyama, 1995[1]; Grenier, 1998[2]). This locally acquired cognitive knowledge is culturally appropriate, socially feasible and useful, allowing the natives to form close bonds and familiarity with their environment. The local population linguistically encodes numerous entities by naming plants and animals, including reptiles and mammals, for identification, preservation and use (Krech, 2005)[3]. If the indigenous people are compelled to stop developing, believing in and practicing local knowledge, the acquired treasure in the form of indigenous knowledge tends to vanish and the community's survival may be threatened in the years ahead. This illustrates how indigenous knowledge and survival tactics are beneficial to the natives' well-being and survival (Krech, 2005; Berkes, 1993[3]; Carpenter et al., 2001[4]; Johannes, 1998[5]). Climate change's effects include increased temperatures, the extinction of animals, increasing sea levels, droughts, floods, diseases brought on by the heat and economic losses. The poorest and most disadvantaged populations in at-risk areas, including indigenous peoples whose way of life depends on natural resources, are disproportionately impacted by climate change. Although they are not to blame for the changes and have no control over or means to mitigate them (Lazrus, 2009)[6]. However, indigenous peoples are also the world's local level or frontline defenders against climate change (Chinese, 2016)[7]. It would be appropriate to highlight their environmental sensitivity, adaptive capacity and resilience, which are demonstrated by their capacity to change their behavior in

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response to changing climatic conditions, in addition to the fact that they are typically portrayed as poor and vulnerable to climate change victims (Hamanaka et al., 2012)[8]. The knowledge of indigenous peoples can offer significant insights into the processes of observation, adaptation and mitigation of the effects of climate change (Chianese, 2016). The Kalasha people of Pakistan use a native knowledge called "Suri Jagek", which corresponds to "observing the sun", to forecast weather patterns, plan the crops to plant and rear cattle. Suri Jagek supports the neighborhood's capacity to adapt to changing weather patterns and maintain its communal lifestyle (UNHCR, 2020)[10]. The resilience of the local population to climate variability and change can be increased as a result of community-based adaptation models. Effective adaptation techniques should attempt to secure subsistence farmers' well-being in the face of climatic changes, even though they have consistently used adaptive measures to some of these changes over the years (Somah, 2013)[9].Adaptation is essential, especially for developing nations like Pakistan, where vulnerability is high since the climate is already changing to such a degree that it is of concern (Nhemachena and Hassan, 2007)[10]. Although mitigation strategies may be used, they will not be adequate to prevent changes in the global climate, which is why adaptation is so critical (Bizikova et al., 2012)[11]. Additionally, the degree of climate change's negative effects depends on how many indigenous people can adapt; otherwise, the effects would be disastrous (Gbetibouo, 2008)[12]. From the postulations of Crate and Nuttall (2016)[13], climate change is environmental colonialism since it primarily affects individuals who live close to nature; those who are most familiar with it and who, for example, experience droughts most severely. People who have historically been colonialism's victims are typically the ones who are most affected by climate change (ElHinnawi, 1985)[15]. Burton et al. (1998)[14] assert that depending on the course of action adopted in response to the external threat, adaptation can take many various shapes. This means that the adaptation is gradual and short-term if it is done so before the threat and preventive if it is done so during the threat. In line with this, a reactive or corrective adaptation would be made if the action was conducted after the threat. Perceptions of local climate fluctuations are closely related to their conviction of the significance and reality of climate change (Ali et al., 2020; Al-Maliki et al.,

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2022[15]). One of the main reasons why people might not take measures to mitigate climate change or adapt accordingly has been noted as a lack of firsthand experience with potential consequences and adaptation of local measures toward combating climate change with most of the initiatives being borrowed from western cultures which in many instances may not be compatible with the local issues in developing countries (Ali et al., 2020)[16]. However, it is crucial to understand that the observable effects of climate change give people a chance to increase their confidence in the reality of the phenomenon. Alternatively, prior beliefs may shape public perceptions through a process of motivated reasoning (Chimi et al., 2022[17]; Ali et al., 2020). To properly organize the dissemination of contemporary scientific knowledge, it is also necessary to outline the indigenous knowledge and climatic concerns of the local population. Indigenous peoples are more aware of changing climate dynamics, including changes in regional biodiversity, since their ontologies are strongly based on local ecosystems (Reyes-García et. al., 2022)[18]. Indigenous groups have, therefore, started building networks based on local epistemologies. These networks document events pertaining to wildlife, environmental health and climate change using indigenous knowledge. The climate change narrative emphasizes the unavoidable relocation of many indigenous peoples, whereas networks support indigenous selfdetermination and cultural preservation. By using adaptation planning as a form of resistance that can aid indigenous peoples in preserving their native homelands and preventing them from being relocated to other lands away from their ancestral homes, indigenous forms of resistance work to refute these narratives (Goodyear-Ka ʻōpua, 2017)[19]. Globally, media attention to indigenous peoples' attempts to safeguard themselves and the environment was too fragmented to develop. Indigenous Peoples' Centre for Documentation, Research and Information (DOCIP) reaffirmed the connection between climate change and indigenous peoples' rights in its 2015[20] publication, noting that for many years, indigenous peoples have drawn this connection, taking the lead in its promotion. Scholars formerly believed that development experts equipped with contemporary scientific understanding could only protect the local population from the dreadful conditions of poverty, starvation and survival (Brokensha et al., 1980[21]; Chambers and Ghildyal, 1985[22]; Warren,

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2003[23]). Analyzing the Pakistani context, indigenous peoples are not acknowledged in the 1973 Pakistani Constitution, and the phrase "indigenous" is not used there. Therefore, there is no specific law to protect the rights and benefits of indigenous People. However, Article 1 of the Constitution and Articles 246 and 247 of the Constitution grant certain rights and privileges to the tribal people who reside in different portions of Pakistan. Under Articles 51 and 59, they are given political representation in Parliament. Despite Pakistan having ratified the ILO, national and provincial laws cannot be extended to the tribal areas without the President's approval. Indigenous and tribal populations are included in Convention 107 (Ullah et. al., 2022)[2425]. In the absence of any other legal framework protecting them, indigenous peoples can be categorized as Tribal Area Residents. The International Covenant on Economic, Social and Cultural Rights, the International Covenant on Civil and Political Rights, the International Covenant on Economic, Social and Cultural Rights, the Convention on the Rights of the Child and the International Convention on the Elimination of All Forms of Racial Discrimination are among the international human rights treaties and declarations that Pakistan has signed or ratified. In 2007, Pakistan cast a vote in favor of the UN Declaration on the Rights of Indigenous Peoples. ILO Convention 169 on Indigenous and Tribal Peoples, an update to ILO Convention 107, has not yet been ratified by Pakistan (Directorate of On-Farm Water Management, Government of Khyber Pakhtunkhwa, 2019)[26]. The World Bank acknowledges that the lands on which indigenous peoples live and the natural resources they depend on are intrinsically linked to their identities and cultures. These unique circumstances expose indigenous peoples to various risks and levels of consequences from development initiatives, including exposure to disease, losing their identity, cultural distortion and denigration and traditional means of livelihood. Furthermore, there are complicated multi-generational and gender concerns affecting indigenous people. Due to a changing climate, Pakistan is significantly more vulnerable to extreme weather occurrences (Ajani and van der Geest, 2021[28]; Elahi et al., 2021[27]; Malik et al., 2012[28]; ur-Rehman et al., 2022[2930]). Pakistan was ranked eighth among nations affected by climate change, according to the global climate risk index (Abubakar, 2018[31]; Siddiqui, 2022). Additionally, forecasted climate change is likely to increase the frequency and severity of extreme occurrences (Arshad et al., 2017; Babakholov et

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al., 2022). As a result, there are clear repercussions for agriculture, and higher crop losses are anticipated, which would ultimately have an impact on Pakistan's economy (Chaudhry et al., 2014; Shakoor et al., 2011; Vozinaki et al., 2015). Indigenous knowledge is the phrase used to describe the information that has been gathered through many generations and is mostly only available in oral form. It is derived from common rituals, experiences and stories that are strengthened by trial and error. Indigenous knowledge may not apply or be transformable to other locations because it is comprehensive, integrative and located within the boundaries of cultural traditions that are predominantly local to a particular region (Ali et al., 2020; Nawrotzki and Polina, 2010[32]). According to the Food Security Cluster (2016)[35], extreme heat and drought have developed in Balochistan and some areas of Sindh, resulting in 37% of pregnant women and 26% of breastfeeding women being extremely malnourished. Similar to this, high malnutrition rates were discovered in the Thar Desert, which endured a severe drought from 2013 to 2015 (Kunbher et al., 2017)[33]. In 2018, more than 500 children in Thar lost their lives due to conditions such as low birth weight, neonatal infection and birth asphyxia (Dawn, 2018)[37]. The Pakistan Government's climate change policy places a relatively greater emphasis on adaptation to actual and anticipated climate change impacts than on mitigation, recognizing that Pakistan contributes very little to global greenhouse gas (GHG) emissions and that climate change is already imposing significant economic and human expense (Government of Pakistan, 2013[34]; Khan and Hussain, 2019[35]). The size and urgency of the work call for efficient and effective techniques, but the government and other national stakeholders may run into some of the same difficulties that have been seen around the world while identifying and implementing these approaches. According to Martine and Schensul (2013)[36], adaptation techniques have had significant drawbacks up to this point because they frequently lack a robust data foundation and tend to be reactive and post hoc. In exploring farmers' adaptation to climate change in Pakistan, Abid et al. (2016)[38] claimed that frequent insect assaults on conventional cotton types caused them to convert to genetically modified cotton cultivars. In response to an increase in the frequency of extreme maximum temperature events, they also showed an increased adoption of wheat species that can withstand heat. Climate change is the biggest environmental issue and scientists and the media are the two most reputable and effective channels for disseminating knowledge about it. Governments, corporations and business enterprises were thought to be very responsible for handling the issue of climate change, but farmers mistrust them. They noted some barriers to farmers' perceptions

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of climate change, such as financial constraints, high input costs and ignorance about potential adaptations. Indigenous climatic knowledge reflects a communalism interaction between humans and the environment.

Findings and Discussions:
Gilgit-Baltistan, a place within the Karakoram and Himalayan mountain degrees of Pakistan, is domestic to a rich cultural heritage and conventional practices which have been surpassed down through generations. However, climate exchange is posing a considerable threat to those conventional practices, and nearby communities are struggling to adapt. This case study at aims to file the cultural know-how and amendment as a survival method, and to explore the climatic adjustments and the effectiveness of cultural practices in Gilgit-Baltistan.

Cultural Knowledge and Modification as a Survival Strategy:
Local communities in Gilgit-Baltistan have evolved specific cultural practices to conform to the harsh mountain environment. For instance, the conventional exercise of "Goor" (a communal hard work device) has been modified to include weather-resilient agriculture practices. In the village of Gulmit, nearby farmers have tailored the conventional "Goor" gadget to include climate-resilient crop rotation and irrigation practices. This has led to multiplied crop yields and improved meals safety. In the village of Roundu and Passu, nearby communities have developed a conventional practice of "Yak" herding, which has been modified to consist of climate-resilient grazing practices. This has led to advanced yak health and multiplied profits for nearby herders.

Climatic Changes and the Effectiveness of Cultural Practices:
Climate exchange has significantly impacted conventional practices in Gilgit-Baltistan, with changing climate styles and improved frequency of natural disasters. For example, the conventional practice of "Apricot" cultivation has been suffering from converting weather styles and multiplied frequency of frost.

Case Study: In the village of Shigar, local farmers have said a decline in apricot yields due to converting climate styles and improved frequency of frost. However, they have got additionally developed modern strategies to evolve to those modifications, which include the usage of greenhouses to shield vegetation from frost. Among the locals of Bshay, neighborhood herders have said a decline in yak populations because of decreased snowstorm and changing grazing patterns. However, they've additionally advanced progressive strategies to evolve to these adjustments, inclusive of the use of satellite tv for pc imaging to become aware of new grazing areas.

Impact of Climate Change on Traditional Livelihoods:
Climate trade has considerably impacted traditional livelihoods in Gilgit-Baltistan, with decreased crop yields, changed grazing styles, and expanded frequency of herbal disasters. For example, the traditional practice of "Hunting" has been tormented by converting climate styles and reduced wildlife populations.in the rural settlement of Naltar, nearby groups have suggested a decline in searching yields because of changing climate patterns and reduced natural world populations. However, they've additionally evolved progressive strategies to evolve to these adjustments, together with the usage of eco-tourism to sell conservation and sustainable livelihoods. Within indigenous community of Khaplu, local farmers have mentioned a decline in crop yields because of changing climate styles and extended frequency of natural disasters. However, they have additionally developed modern strategies to evolve to those changes, consisting of using climate-resilient crop sorts and irrigation structures.

Role of Traditional Knowledge in Climate Change Adaptation:
Traditional knowledge plays a critical position in climate alternate edition in Gilgit-Baltistan. Local groups have advanced unique cultural practices and strategies to evolve to the tough mountain environment. In locals of Roundu,with strong traditional practices local communities have used traditional understanding to broaden weather-resilient agriculture practices, consisting of the use of crop rotation and irrigation structures to conform to converting climate styles. In the village of Shigar associated with high levels of socio-economic vulnerability, nearby groups have used conventional information to broaden weather-resilient grazing practices, which includes using satellite tv for pc imaging to identify new grazing regions and adapt to converting weather styles.

Challenges and Opportunities for Climate Change Adaptation:
Climate change variation in Gilgit-Baltistan is challenged by means of confined get admission to to assets, infrastructure, and records. However, there also are opportunities for innovation and entrepreneurship, particularly in the regions of sustainable agriculture and eco-tourism. In the village of Naltar, local communities have developed revolutionary techniques for sustainable agriculture, including the use of greenhouses and solar-powered irrigation systems. This has ended in improved crop yields and accelerated profits for neighborhood farmers.

Case Study: In the village of Khaplu, nearby communities have advanced innovative strategies for eco-tourism, such as the use of homestays and guided trekking tours. This has led to accelerated income for local groups and promoted conservation and sustainable livelihoods.

Conclusion:
Climate change is irreversibly reworking the cultural panorama of Gilgit-Baltistan, threatening the very lifestyles of conventional practices which have been handed down through generations. This case study has highlighted a long way-achieving influences of climate change on conventional agriculture, herding, and searching practices inside the place. Despite those demanding situations, local communities in Gilgit-Baltistan are demonstrating first rate resilience and adaptability. By modifying conventional practices and developing progressive strategies, they may be finding ways to live on and even thrive in the face of climate change. However, it is clear that outside help and assets are had to supplement nearby efforts. Policymakers, practitioners, and researchers ought to paintings collectively to develop and enforce effective climate alternate edition techniques that prioritize the needs and perspectives of neighborhood groups. Ultimately, the future of conventional practices in Gilgit-Baltistan relies upon on our collective ability to aid and empower neighborhood groups as they navigate the challenges of weather exchange. By doing so, we will help make certain the long-term sustainability of these unique cultural practices and the groups that rely on them.

Suggestions and recommendations:
This article is about the Local response to Climate Change Impacting traditional knowledge and Practices in Gilgit Baltistan. Academically, this article has a great importance because in current world climate change is a huge issue to confront. Recently Pakistan lost lot of things due to climate change whether that is human resources or the economic resources. Pakistan had the 40$ billion dollar lose due to the unseasonal flood. So it would be great to work on this topic to highlight the climate change effects and consequences for local, national and international stakeholders. The outcomes, recommendations, and remedies will support the local people for coping up the climate change in traditional way as well as in modern way to use of technology to safeguard themselves from the faced issue. In the same way, non-government organizations also can get benefit. They can continue their work in this region and take this research as a precautionary measure to handle

the environmental change in their work site. As the Chines companies are working on different projects in Gilgit Baltistan. In addition, local people, NGOs and governmental institutions can use this research in making good polices for the indigenous people of Gilgit Baltistan. On the other hand, people of Gilgit Baltistan come to know the importance of the indigenous knowledge which they used in the old time for the reservation of their food and get rid of from the natural hazardous of climate change. Also we can include this study in the academia where we can tell the students about the concurrent issue of northern areas of Pakistan. It will not only benefit the local but also it can ease the way of other organizations to continue their work in this region. Most importantly, it gives a lot of benefits to the government of Pakistan. Government official can use this study as a precautionary measure to counter the predictable problems in a great way.