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INDIGENOUS KNOWLEDGE AND DISASTER MITIGATION: THE CASE OF KALASHA COMMUNITY OF NORTHERN PAKISTAN

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ABSTRACT

There is dearth of qualitative data on Indigenous Knowledge and Disaster Mitigation in the context of Pakistan. This paper attempts to understand the indigenous knowledge of Kalasha Community and its effects on disaster mitigation mechanism. Kalasha Community commonly misnamed as Kalash *Kafirs* (unbelievers), are the last polytheists and non-Islamic group of the Hindu Kush range living among a predominantly Muslim population of northern Pakistan. They live in a hostile (both social and physical) environment that poses numerous threats to their survival like natural disasters. These threats are jeopardizing their physical and cultural survival. Building on qualitatively research methods, this article describes how Kalasha community has actively used its environment to fulfill its needs through subsistence agro-pastoral economy enabling them to combine both knowledge of the environment, its natural resources, its optimum use and the proper sanction of this knowledge through religious beliefs. Dwelling patterns, selection of site for building, building codes, use of wood, trees, land, water etc. are properly dictated by religious beliefs that are to ensure sustained survival of the whole community. It is because of this indigenous knowledge, belief system and its proper translation into action that the community has been keeping itself safe from "natural" as well as manmade disasters and hazards for centuries. This indigenous community can guide humanity to sustainable future for generations to come.

INTRODUCTION

The importance of traditional and indigenous knowledge is widely accepted to foresee and to mitigate hazards. Research studies on flash floods and earthquake in Chitral (Dekens, 2007a), on floods in Bangladesh (Rasid & Paul, 1987) on land sliding and floods in Mexico (Alcántara-Ayala, 2004) on floods in Malaysia (Chan & Parker, 1996) are some of the examples where the value of disaster mitigation strategies are based on indigenous knowledge (Hiwasaki et al, 2014).

Noam Chomsky and others consider indigenous communities as the last hope for human survival on the earth. He argues that the people whom we consider 'primitive' or uncivilized are trying to protect us, the enlightened ones, from catastrophes and disasters. Nations, tribes and communities with large indigenous population are seeking to preserve our planet while regions and nations where indigenous population is near to extinction are moving fast toward ultimate destruction by adapting lifestyle that is ultimately affecting the health of the planet (Chomsky, 2013; Steward-Harawira, 2018). These indigenous communities have sustained a lifestyle by keeping a balance between their eco system to survive and sustain. It gives a clear message to modern economic practitioners and environmentalist. In fact, most of the environmental issues are because of the overuse of natural resources in the struggle to maximize profit. Indigenous populations have sustainable lifestyle without endangering environment and resources. They know how to keep a balance between environment and their needs.

Ellen & Harris, (2003) identified the ambiguity and difficulty in defining indigenous knowledge. There are few attributes that make the problem less complicated. Indigenous knowledge is local to a certain place and product of people living there which is transmitted orally or imitated from generation to generation. It is the result of constant practical usage in everyday life, it is patterned or repetitive in nature, and has symbolic utility, holistic in nature and integrative.

Anthropological studies on disaster give deep insights into issues related to the disaster. The recent discussions (See for example Standford and Robin, 2019; Eisenbruch, 2020) in Anthropology put great emphasis on understanding the issue of disaster in terms of environment-human relationship that is how humans utilize its environmental resources. This perspective views hazards and/ or disasters as primary elements of natural environments and the systems developed by humans. Humans' crafted systems are modifications in the natural environments and represent both physical (material culture) and social systems (human societies). Other commonly held perception about hazards and disasters is that these are extreme events that are considered unpredictable. When this view emerged, these (hazards and disasters) become a daunting test for human adaptability to environment and its sustainability. As an effect, if a community is not capable to

sustain major disruption and damages like disasters, it means it has not evolved a sustainable way of survival (Oliver-Smith, 1996).

The holistic nature of Anthropology contributes a lot to understand different aspects of disasters and its relationship with human societies. Ethnography unfolds complex relationship between human structures and disasters. Until very recently, disasters were considered as immediate events. The focus of most disaster studies was on managerial and organizational responses embedded in top to bottom approach of development (Chairetakis, 1991). In doing so, early Anthropological studies on disasters and hazards considered it as “systematic dimension” of the environment that includes living and non-living organisms around humans. Traditional societies have developed effective mechanisms and adaptations to counter these hazards. As a result, humans, in traditional societies, live sustainable lives despite difficult conditions (Torry et al, 1979; Oliver-Smith, 1996). The knowledge of traditional societies about their environment and potential hazards place them and their knowledge on top to counter disasters. In recent approaches of disaster mitigation, indigenous knowledge is occupying main role.

Indigenous knowledge approach in disaster studies emerged with the emergence of vulnerability model. Human sufferings and disasters are functions of vulnerability of a particular group or individual where “where vulnerability is defined as the characteristics of an individual or group that shape “their capacity to anticipate, cope with, resist, and recover from the impact of a natural disaster” (Wisner 2004:11, Lauer, 2012: 177).

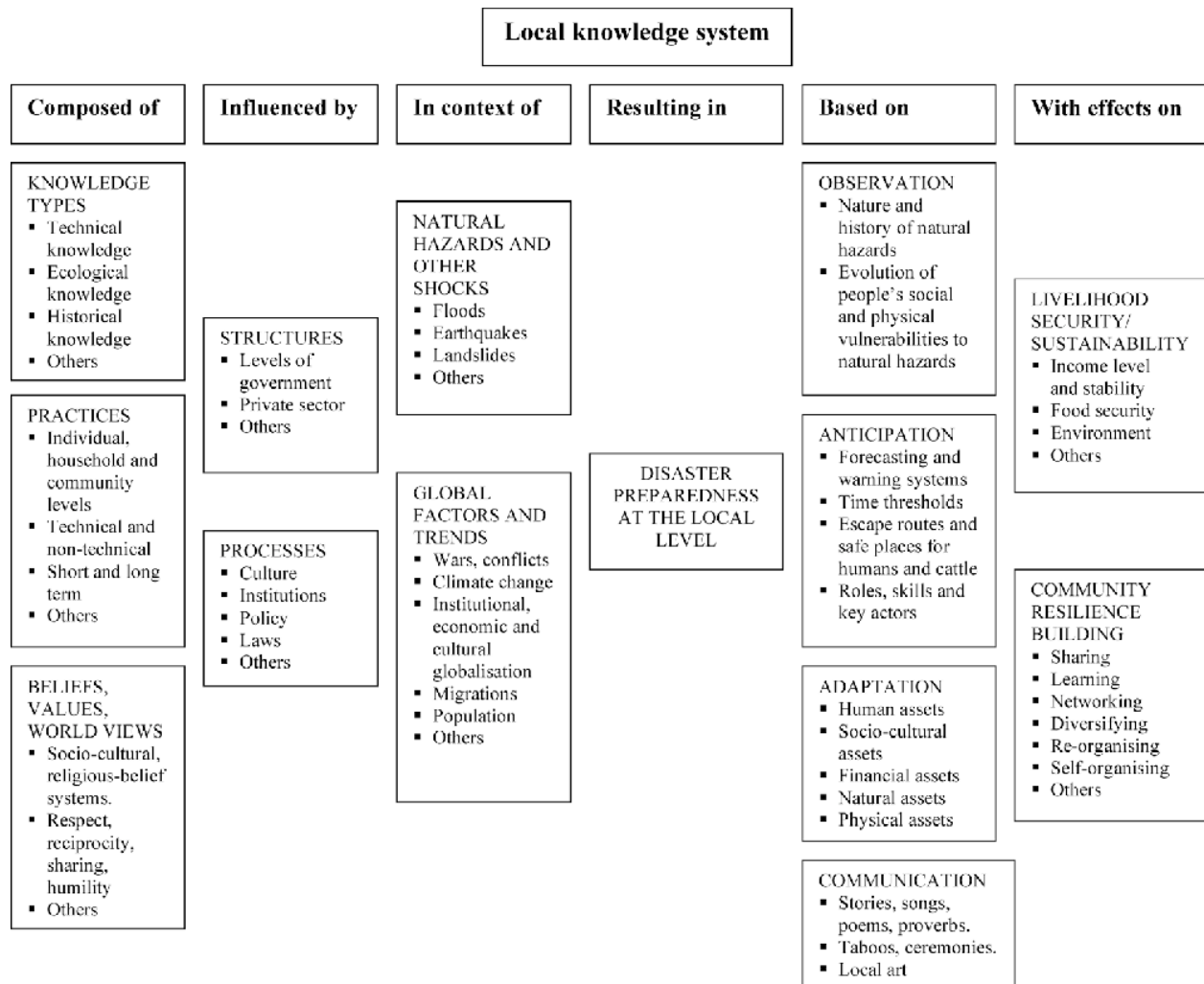
Prior to the idea of vulnerability, to describe hazards and disaster, conventional view of development ignored indigenous knowledge or its utility. According to the conventional view, traditional or indigenous communities lacked technique of “modernization” and economic development. In such a situation where, indigenous communities lack modern economic development, local practices should be abandoned so that they could achieve economic development by adapting mainstream social economic systems. In doing so throughout the world indigenous practices started disappearing (Sillitoe, Bicker, and Pottier 2002: Lauer, 2012). As capitalist and new liberal economy models spread all over and consequently indigenous knowledge eroded. Gradually researchers and related people to disasters when worked closely with indigenous communities recognized the fact that indigenous communities in many ways cope with the environmental hazards (Lauer, 2012). Looking into the case of Kalasha Community, similar conclusion could be drawn.

Once it was realized that indigenous communities can better cope with environmental hazards, it helped international community to understand indigenous knowledge and practices of indigenous communities to counter hazards. Through this, a better understanding of ecological hazards could be achieved, and disaster risk and vulnerability can be reduced (Becker et al. 2008;

Ellen, 2007; Mercer et al. 2010). This changed a lot about research on disasters which is now focusing on broader perspectives than looking into narrowly biophysical aspects of hazards and its contribution to trigger events (Hoffman and Oliver-Smith 2002; Oliver-Smith 1996; Wisner 2004).

Analyses of indigenous coping strategies are mainly focusing on myths or oral traditions of the indigenous communities. It means that disaster mitigation mechanism is the product of long-term process that evolved indigenous knowledge regarding disasters. Sometimes it is not easy for outsiders to grasp fully the techniques that indigenous communities adapt to counter hazards as they are guided by myths and belief system. This evolution in research about indigenous knowledge and its response to hazards opened new avenues for disaster research (Cruikshank 2005; Ellen 2007; Lauer, 2012).

One worth appraising effort to understand indigenous knowledge and its response to hazards and disaster is done by Dekens (2007b). Dekens developed a framework to guide researchers on data collection and its analysis of local indigenous knowledge related to disaster mitigation (see its uses in Mercer et al, 2010).



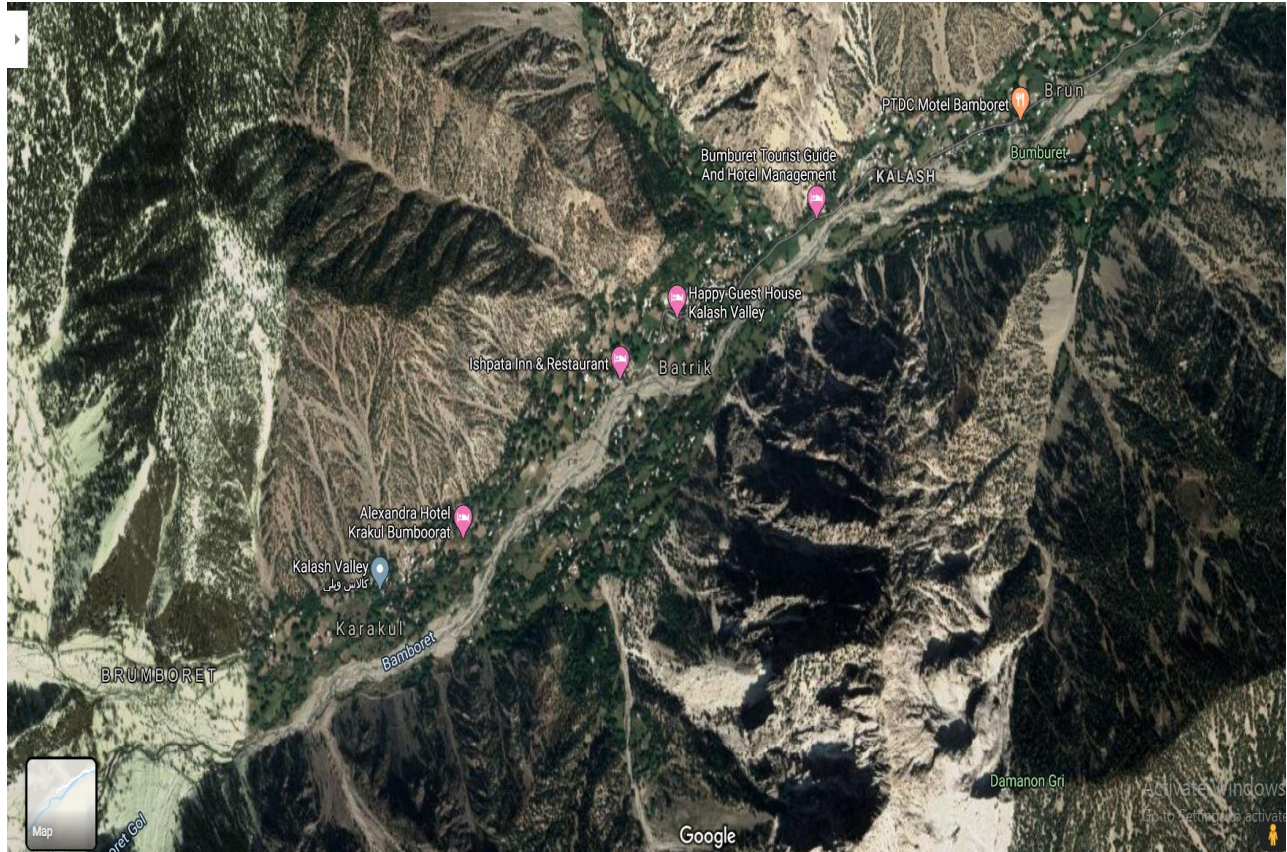
Source: Dekens (2007b)

Through this paper, we try to describe indigenous knowledge, myths, and practices through which Kalasha community is surviving environmental hazards.

Kalasha community is facing both environmental as well as human pressures in the form of natural hazards. This region is considered vulnerable for high probability of earthquakes and flash floods (Dekens, 2007a). This article describes the ways this community is coping with hazards and disasters. How they have incorporated the disaster mitigation mechanism within the indigenous knowledge system. How much this community knows about the environment that they are living in, and how they utilize environment to cope with hazards.

Setting the scene: -

Bumburate Village Map



Source: Google Earth, 2020

Primary data is collected from Kalasha community members living in Bumburate, one of the three valleys of research locale. Kalasha community is currently living in three valleys situated in South-Eastern part of Chitral district which is making North-western side of Khyber Pakhtunkhwa province of Pakistan.

This valley is accessible through a very difficult road from Chitral town; at approximately 35 Km. Six hamlets make Bumburate Valley that is built mostly on the northern side of the stream running in the valley between lush green mountains. Muslims are in majority due to recent migration in the valley and conversion from Kalasha but Kalasha to non-Kalasha ratio varies in each hamlet. Kalash community is mostly living on hilly areas at some distance from the stream while Muslims are mostly living in lower areas. Main sources of income are subsistence farming, livestock, fruit trees, and tourism.

Chitral became district of then NWFP province of on July 29th 1969. Before that it was a princely state which came under indirect rule of British in 1895 who after defeating the local rulers appointed the youngest son of the former ruler as prince of this state. The boundaries of the state at that time were extended to Kunar

valley and Chaghsari in the South of Chitral. These places are parts of Afghanistan now (Sheikh et al, 2014).

METHODS AND MATERIALS

Primary data was acquired through anthropological qualitative research techniques involving participant observation, Semi-structured, in-depth interviews, and Focus Group Discussions etc. Total number of respondents was 30. Selection of the respondents was based on purposive sampling.

Secondary data consisting of reports and gazetteers of British colonial administrators, linguists, and ethnographic reports on the religion, social structure, ecology, dwelling patterns, economic and political structures of Kalasha community were also consulted to comprehend the issue. By reading all this published data, it became much easier to connect Kalasha community collective behavior to their survival.

Kalasha: Profile of a Community

Kalasha community, for their unique social structure, religious beliefs and cosmology, is making one distinct group of Hindu Kush mountain range, numbering approximately 5000 people (Bashir 2011).

It is believed that the Kalasha community is living with present social structure for more than 3000 years and is famous among social anthropologists for the distinct culture that they have survived among the majority Muslim community (Taj & Ali, 2018). Kalasha are facing threat of conversion from neighboring Muslim communities which is posing major threat to their culture and religion that they have sustained for centuries. The biggest threat is the conversion of Kalasha which is resulting into extinction of this community. Other threats are violence and robberies especially of their goats and cows which is lifeline of this community (Choudhry et al, 2017). Being the last polytheistic community of the region, Kalasha people have attracted many anthropologists, historians, journalists, and linguists to write on different aspects of this community (Maggi, 2001).

As mentioned earlier, Kalasha community is the last pagan, polytheist community living in north-eastern Pakistan. Presently they are limited to three narrow valleys in south-east of Chitral. Northern Pakistan is home to many diverse cultures and languages. The same is true for Chitral district which was once a princely state. Factors that make Kalasha community different from the rest is their unique culture, belief system, cosmology, and rituals etc. This uniqueness of Kalasha community has raised many questions about their roots and origin. Having such questions many researchers, historians and ethnographers have developed different myths of their origin (Cacopardo, 2008).

There is popular belief held among Kalasha community that they are the descendants of ancient Greeks. When Alexander the Great reached with his army, his soldiers were left behind, and they are living in this region (see for example Trail, 1996).

While others believe that they were present in the region even before the arrival of Greeks in the region. This claim is supported by archeological findings through excavations in the region which depict the existence of Kalasha community long before Alexander the Great (Choudhry et al, 2018).

Historically, Kalasha once ruled most of the southern part of Chitral till first Muslim ruler from Raees dynasty defeated the last king of Kalasha, Raja Wai around fourteenth century to fifteenth century (Siiger, 1956; Loude & Lievre, 1984; Cacopardo, 1991). Kalasha community was not limited to these three valleys in the past and was enjoying greater freedom because of the lingual and cultural similarities between Kalasha community and people living in surrounding areas (Cacopardo, 2016).

The International Union for Conservation of Nature (IUCN) and UNESCO both have declared that Kalasha community is an endangered group of people. They want to help this community to protect its culture. UNESCO has already listed this indigenous community for consideration of it as World Heritage Site because of the constant pressure from outsiders that is resulting into the extinction of this culture (IUCN, UNESCO cited in Khan, 2013).

Kalasha community has maintained a balance between consumption for survival and sustainability of the environment. The survival strategies of this community are based on the century's long experience and knowledge about their environment. As compared to other parts of Chitral and neighboring areas, Kalasha Valleys are relatively abundant in most of the natural resources which are providing ample chances for successful subsistence farming and pastoralism. One reason for this abundance of resources is because of its optimum utilization avoiding overuse of the precious natural resources (Parks, 2000). Land, water, vegetation, and domesticated animals in the valley are four factors that Kalash community is utilizing for their subsistence. The knowledge of these four factors and their subsequent optimum utilization makes Kalash community different from the rest of the people living in the area. The use of lower range forests of Holm oak (*Quercus baloot*) locally known as *shahbaloot*. These forests are visible and intact which is used both as fodder for goats and keeping houses warm in winter. These techniques-based on indigenous knowledge, enables Kalasha to have more herds of goats. By utilizing traditional ways of farming enabled them to take more per unit of land yield compared to neighbor Muslim communities (Sheikh & Khan, 1983; Hesperodt; 1989; Parkes, 2000). Same is true for alpine forests and for proper channelization of water to reach arable land. Proper mechanism to conserve forests made it possible. Proper channelization of water resources made it possible to have enough water for crops, livestock, and domestic use.

Indigenous Knowledge of Indigenous Community

People of Kalasha community are not over-using natural resources beyond the limit. They need to maintain equilibrium between what they need for living and what nature offers. It is a basic lesson that Kalasha community has evolved for their survival as being almost isolated within narrow valleys and thick mountains. The very equilibrium between the needs of the Kalasha people and resources in the form of forest, pastures and arable land is keeping their survival possible. It is not static though but the sanctioned beliefs and way of dealing with the natural resources keep Kalasha community most suitable to survive by continued use of local knowledge. The identity of Kalasha is intact because of the valley as outside of this valley they do not think of following their culture and religious traditions. They consider this place pure and the rest of the world where non Kalash are dwelling as impure. Owing to this reason, for Kalasha community these valleys are much more important than other people who are living here. This concern has developed deep sacred connection of Kalasha people to its environment and its resources (Fentz, 1996). In the following section of the paper, the strategies are discussed that depict the embodiment of indigenous Kalasha knowledge of its environment that ultimately results in the sustainability and disaster mitigation.

Kalasha Dwelling Patterns

Valleys, where Kalasha are dwelling, are situated in difficult terrain. Owing to the less accessibility, Kalasha Community has maintained and survived their traditional lifestyle which is necessary for their cultural and religious survival. One of the cultural features is the dwelling patterns of Kalasha people. This includes the selection of site for houses, its internal structures, distance from lower streams as upper land pastures are situated on top of the mountains, etc. This pattern of dwelling is adopted by most of the Kalasha households in every hamlet in the valley where field work was conducted. Infiltration of market economy, increasing population pressures and urge to adopt modern lifestyle are factors forcing families of Kalasha community to compromise these rules of dwelling which are constantly challenging traditional lifestyle.

Kalasha people have adopted to use solar energy adequately so that their dependence on other energy sources for warmth, mainly timber, could be reduced and as a result forest trees as well as non-forest trees consumption could be minimized adequately. Compared to Kalasha community in the valley, newly arrived non-Kalasha migrants do not care much about these rules. A considerable part of these rules for Kalasha community is directly or indirectly governed by their belief system that is making it possible to keep a balance between the available natural resources and needs of this community.

All seven hamlets of Kalasha community are built on the north-eastern slopes of the mountain ridge in Bumburate valley. In winter Kalasha people come out of

their houses early in the morning to get warmth in the sun. Interestingly in summer these hamlets remain under the shade of high mountains behind the hamlets for most of the day. Additionally, it melts the snow on and around their houses quicker than the rest of the valley.

Concept of Onjesta (purity), Paragata (impurity) and Dwelling Patterns

The concept of Onjesta (purity) and Paragata (Impurity or pollution) is making fundamental concepts and religious cosmology of Kalasha Community and dictates most of the worldly affairs. “The onjesta and pragata are a symbolic system of the Kalasha”(Choudhry et al, 2018; 5). Men and women, mountain and stream, highland and low land, home and Bishalini (women exclusive place for staying at times of menstruation cycles and pregnancy), goats and cows are embodiments of this dichotomy (Sheikh, 2013). This concept guides the construction of houses and site selection as well. These sacred rules have functional utility.

Kalasha Community tries to avoid building houses on low land as near stream and places near the stream are considered impure. This stream is running in the middle of this narrow valley. It pours water from melting glaciers situated high up in the mountains into Chitral River. Few people in the Kalasha community have built houses in lowlands near stream. Some of these constructions are recent and influenced by one or all factors stated earlier. Increasing population pressures, business in the bazaar, tourism resulting hotels, shops are the reasons that push some Kalasha members to build houses near the stream in low land. Other cases of low land dwellings are adopted by those people who are converted to Islam, belong to lower strata within Kalasha community. Kalasha have hierarchical structure and in this hierarchy lower-land dwellers were at the bottom, artisans, carpenters and serving class of the relatively higher status Kalasha who were not mixed with lower class Kalasha and maintained distance by living on high land. Because of their lower social or political status and pressure of conversion, this segment of Kalasha population converted to Islam in the middle of 20th century (Darling, 1979; Cacopardo, 1992). This is confirming the vulnerability pressure and release model which is about power, political status and its inverse effect on vulnerability to natural hazards. According to pressure and release model, one of the main causes of vulnerability is the political, economic, and demographic conditions. Groups with less economic opportunities or political status are more vulnerable than otherwise (Blackie et al, 2005, 2014).

Surviving Floods and Indigenous Disaster Mitigation Mechanism

Distribution of land-based on the rule of the pure and impure, building of houses keeping a distance from the stream has again practical implications. In flash floods of 2010, 2013 and in 2015, no Kalasha house was affected though it destroyed valuable fruit trees and precious arable land situated near the stream except two houses of Kalasha who left their old village for reasons like growing

population (growing number of family members who can't adjust within their father or grandfather house for many generations), proximity to their farmlands, and storage of grain and supply of artificial fertilizers that they bring from the market.

Tourism is also putting pressure on this indigenous community that pushes them to violate and ignore established rules followed by their ancestors keeping in view the nature of the land, water, and everything in nature that is vital for their survival. When it comes to making sense of why these families suffered and not most of the others, "it is believed in Kalasha Community that these families have disregarded the rules of onjesta and pragata (purity and impurity) and earned wrath of holy spirits that resulted in this disaster", Kabir Kalash who is 30 years respondent, said. In comparison to Kalasha population, more than a hundred houses of non-Kalasha are washed away by these floods as they don't have concepts of purity and impurity as that of Kalasha regarding dwelling patterns and distribution of land based on this rule. Zameen Kalash, a primary school teacher said while explaining the dangers of living near stream: "if there are round rocks under the upper soil; it is like eggs of flood. Sooner or later it comes to reclaim it. Better avoid building houses on places where there are flood eggs". Being indigenous community of the valley, Kalasha community knows it better than anyone here and they have chosen safe places for dwelling. These rules are so much important that it is reflected in their belief system.

There are latent and manifest functions of this pure and impure dichotomy related to lower and upper lands. On the one hand, this rule is providing space and privacy for menstruating and pregnant women. Apart from that women are not allowed to wash hair from head inside houses as it is considered bad omen. On the other hand, these rules provide women exclusive access to river and its surroundings. Another very important role of this rule is to maximize the output of fertile land that is situated on both sides of the stream. Most of the hamlets are built on ridges where farming is not possible. Rehamat a 30-year-old respondent from Kalasha community, said "there are two canals, constructed long ago and are still intact on both sides of the river. These two canals are proving boundaries between pure and impure land and in fact below these canals most of the land is arable and crops are grown there. Strategically low land is easy to access not only to the local community but also to invaders as raids from outsiders were common in past".

A dwelling on relatively upper parts of the valley is advantageous in case of raids as that used to happen before British came to Chitral as rulers. One obvious latent function is to avoid being flooded.

Earthquake and Indigenous Disaster Mitigation Mechanism

As mentioned earlier, Kalasha people use natural resources in a balanced way so that they do not run out of the necessary items. One example is the use of Holm

Oak tree (*Quercus baloot*) locally known as *shahbaloot*. This type of tree can be found throughout Chitral but because of overuse the tree is fast vanishing. In Kalash valley the tree is still found in excess because of the careful use and not overusing it. This tree is perceived as one of the hard types in this region and can resist heavy storms. These trees also block heavy rocks to slide down when it falls from high altitude. Most of the mountains in Chitral are unstable and erosion is usual. It grows on lower sides of the mountains making a line below pine trees of various types. Kalasha communities have built their houses below the line of these oak trees and usually below steep ridges. In the past, Kalasha community was facing raids by nearby tribes. One reason to choose places of dwelling near steep ridge is to curtail the attackers and limit them to one side that is from below the mountain. But the problem with steep slopes is its very probable that rocks can fall during heavy snow falls, rains, and earthquakes. To avoid this, Kalasha have always chosen places where they have Oak trees above their hamlets serving as shelter. During earthquake and flash flood of 2015 in Chitral valley, none of the Kalasha houses were affected by falling rocks though they are built on steep slopes.

Pollarding of trees is common in district Chitral so that limited wood trees could be improvised to meet demands mainly for keeping houses warm in long cold winters. In Kalasha valley, it is done with extra care as for Kalasha population it is their lifeline. In the case of Oak tree, as it is ever green tree, its use is bit different. Oak leaves are used as fodder for goats and other domesticated animals in winter. Imran, a local political figure, said “we do not cut big branches for our goats rather we cut small branches from a portion of a tree and then from another tree. In doing so, it is repeated every year and every year every other portion of the tree is used for fodder. This technique keeps the tree healthy and alive for long and keeps it enabled to provide fodder to sheep, goats, cows and oxen, which is making not only lifeline of Kalasha people but their religious ceremonies are heavily dependent on it. In winter, when cattle are brought back, Holm Oak branches are used as major fodder. The remaining branches are used as firewood for cooking and keeping houses warm. This decreases dependency on forest precious timber for cooking and warmth.

Building Codes and Indigenous Disaster Mitigation Mechanism

Apart from choosing adequate place for building houses, it is equally important for Kalasha people to keep intact building codes which are in fact informal rules considered necessary for durability, safety and security. The rules of building houses are transferred from generation to generation. Building codes of Kalasha are partly borrowed from Red Kafir, (there were two pagan tribes, red and black. Red tribe was residing in Nuristan and were forcefully converted by one of the Afghan emperors. Barrington, Kendrick, & Schlagintweit, 2006) Now a days they are living on border side of Kalash regions in two valleys Bumburate and Rumbor. The logic behind following strict Kalasha building code is to make houses durable and resist any kind of calamity or hazard that is known to region

and Kalasha community. These building codes evolved as Kalasha community has experienced different kinds of hazards and correspondingly Kalasha community established it.

Building material includes flat rocks, big and small, clay and Deodar (Cedrus Deodara) wood, most durable variety of pine trees. This type of wood as mentioned by Ikram Bulasingye, a respondent from Kalasha community who works at Kalashadur, local Kalasha museum, is used to build walls of houses by Kalasha community for its light weight and its durability. If properly protected from water, it can sustain for more than thousand years. Kalasha build houses from this material which is locally available in abundance. Using it in a right proportion and sequence ensures durable building structures. As mentioned earlier, Kalasha build houses at certain height on mountains. It is considered necessary to select harder mountain or part of the mountain as it is not safe to build houses on places that is not hard enough to provide stable foundation. Another reason for choosing hard mountain is that it has less moisture that keep house dry especially ground floor. The logic behind keeping it dry is to store dried eatables in the lower portion. Wet atmosphere can easily rot it especially in severe winters and snow seasons. After selection the place, leveling is done to start raising walls of the house. All four sides of foundation are carefully leveled. This leveling is considered important beneath the walls. It is believed that if foundation is not properly leveled to start walls at equal level, can affect the durability of the house. Houses on slopes are not durable to hazards especially earthquakes but Kalasha know this and they avoid building on slopes rather they always level the mountain so that every initial rock could be placed on equal level. Heavy flat rocks are used in the base. These rocks are providing stable foundation as flat rocks never slide on each other and provide firm hold. When reaches to the surface of the mountain, watered soil is mixed with rocks. In between heavy rocks, small flat rocks are used that act just like nails for firm hold. The size of the walls below surface is always bigger ranging from two to three feet, than above surface walls. Kalasha never use round rocks in building as it can easily slide on each other.

After that the use of wood, Deodar, mixed with rocks starts. Kalash use wood on both sides of every wall in the house, interior and exterior. Usual the dimensions of wood are six inches on each side that extends from one corner of the building to another. The width of the ground floor walls is around two feet including wood content. Distance between every pair of woods is one and a half feet to two feet. At corners, all four planks of wood are properly locked by placing on each other. In ground floor heavy flat stones are used while in first floor the size of the rocks diminishes as compared to ground floor. Similarly, the distance between wood pairs also reduces to keep walls light in weight.

Kalasha often prefer to build two or multi-storied houses as they have functional reasons for doing so. First reason is harsh weather especially harsh winter in Kalasha valley. At times of heavy snow, it becomes very difficult to remove snow from large surfaces above houses. Double or multi-storied houses decreases

surface exposed to snow and likewise it is easy to remove it. Secondly, in severe snowfalls, Kalasha call it *Satratdo* which literally means seven days and seven nights of snowfall. Kalasha valleys get more snow as compared to the rest of the district. In heavy snow fall, the piles of snow around houses reach very high and in old times it reached the top of the ground floor. That is why Kalasha people do not have doors on the ground floor but a small entrance at the corner that connects different floors. In such conditions, people remain inside houses. The ground floor is used as storage to keep grain, dried fruits and vegetables, wood, and vine. Because it is airtight, it keeps these food items dry. On first floor, lightweight things are placed to reduce the threat of falling. This keeps the house more resistant to earthquakes.

During 2015 earthquake, out of one hundred and seventy-four partially damaged and seventy-four fully damaged houses, only minor or partial damages had occurred to four Kalasha houses. This damage was done mostly to prayer places that was constructed by NGOs in which traditional codes of construction are not followed. It supports the indigenous logic of Kalasha people that houses on soft ground are more vulnerable in comparison to houses built on hard mountains if construction codes are followed.

CONCLUSION

We conclude that new emerging threats of climate change, global warming and Pandemic are affecting minority and indigenous communities all over the world. Indigenous people feel it more than anyone when climate change affect their natural environment as there is deeper connection between their cultural survival of such communities and natural environment (Baird, 2008). Post-colonial states and indigenous communities are in troubled relationship. Most striking challenge for such post-colonial states, like Pakistan, and its inability to meet the needs of cultural and religious diversity (Howitt et al, 2012). Kalasha community is feeling insecure owing to climate change and Global warming effects on their eco system in shape of flash floods as the scale of these flash floods is increasing affecting their livelihood. Climate change is affecting its natural environment that is necessary for sustenance of their religious and cultural survival. While state is not doing enough to protect their rights in shape of not protecting the environment from factors that will ultimately destroy the natural environment.

United Nations White Paper has recognized the significance of indigenous communities to cope with hazards and disaster as their knowledge is time tested. Important point about indigenous communities is their intimate relationship with the environment. People working on disaster mitigation are mostly outsiders who always unduly neglect this knowledge (Hilhorst et al, 2015). It is therefore important to understand that both social and biophysical environments are facing rapid disastrous change. These days there is a big challenge for modern societies to handle disasters and hazards in manner that outcome is more sustainable and securing rights of indigenous communities. These outcomes must be resilient while respecting human rights, and developing cultural, social, and economic

wellbeing at affordable costs and in reasonable time frame (Hocke and O'Brien, 2003). Kalasha community understands its environment better than anyone. They are so much connected with the environment that they do not think of themselves, their religious rituals, culture without their natural environment in which they are living. Through indigenous techniques of mitigation, Kalasha community has proved its worth to survive hazards and disasters for centuries.

It can be concluded that because of knowledge of the local environment, Kalasha community has evolved a life pattern that best suits them in this area. Connections of Kalasha religion and their subsistent agro-pastoral economy reinforce each other providing a perfect balance between what they need for survival and what natural environment offers. Kalasha belief system is ensuring the survival and safety of Kalasha community. It is also true that changing life patterns, penetration of capitalist neoliberal economy (Wallerstein,1974), pressure of modern lifestyle and threats of Talibanization and religious conversion are risks jeopardizing their traditional lifestyle and traditional knowledge-based life patterns. This indigenous community has survived hostile and harsh environment owing to the indigenous knowledge they have evolved. Within it they have learnt how to mitigate hazards like flash floods and earthquakes. It is the responsibility of the state institutions to seriously protect their language and cultural heritage as an endangered community and consider the involvement of Kalasha community in policy making and its implementation for the natural environment and to effectively mitigate hazards and disasters. This study also suggests further studies on indigenous knowledge, natural and social conservation and threats from modern mass production and consumption economies to these slowly vanishing communities.

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