Chapter 6
Communicating About Natural Hazards

"Knowledge generation in itself will not be sufficient for building adaptive capacity in social-ecological systems."

(Folke et al. 2002)

Generating knowledge does not mean that knowledge is understood, memorised, and used. In other words, knowledge generation is different from knowledge assimilation. In many societies with oral traditions, past events, including flood events, are embedded in individual and collective memory through storytelling, songs, poems, proverbs, worshipping activities, ceremonies, and rituals. These activities serve as a way of communicating in time (between different generations) and in space (from place to place). Various studies in anthropology and human ecology (e.g., Folke et al. 2002; Berkes 1999) have shown how rituals and taboo are the transformation of social memory into practical resource and ecosystem management. Worshipping ceremonies, storytelling, songs, and proverbs not only help people to remember past events but also help them to convey messages in an attractive and convincing manner. Local songs and proverbs also help to turn abstract events into something more vivid and concrete. The younger generation may not have faced a major flood, and therefore it is difficult for them to fully understand what it means and to consider it possible in the future.

Stories from local religious leaders, elders, and families

"An old story says that a religious leader called Metar Qalandar used to live in Brep village in Upper Chitral. The holy man predicted that three parts of the village which were under three streams would be washed away by floods in turn and from time to time. In 2005, a flood washed away 103 houses. People say that the night before the flood, they heard a mysterious noise and knew that something was going to happen." (Narrated by Muhammad Siyar Khan, Brep village, Upper Chitral)

"Every year whenever a small flood occurs, elders in the village keep repeating stories related to the bigger floods that have happened in the past. The elders say that the past 2006 flood was higher than the previous ones." (Islamuddin, Aziz Urahman, Gul Muhammad Jan, Rashidullah, Kahn Zarin, Ghulam Jafar, Gurin village, Shishi Koh Valley, Lower Chitral)

"One hundred years ago a similar flood event to the one in 1978 took place. Our grandparents used to tell us about it! Everybody knows about it in the village. After what happened in 1978, we have told our kids that whenever there is heavy rain they have to escape." (Woman, Chenar village, Mastuj, Upper Chitral – the 1978 flood is very much alive in every day discussions.
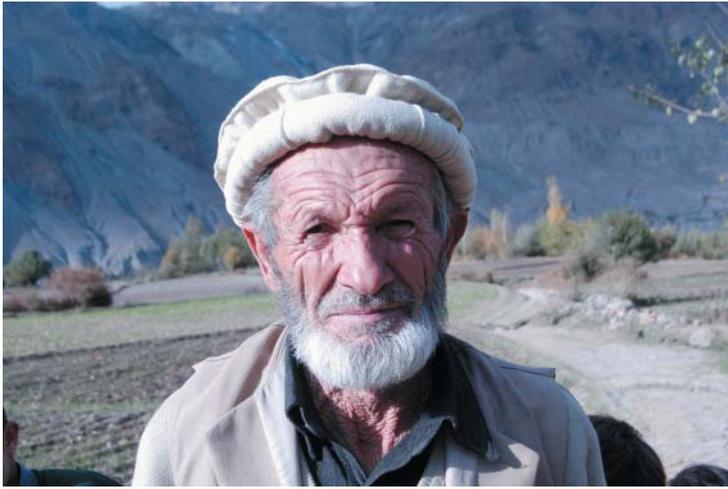

Figure 17: Elder wearing traditional Chitrali cap, Reshun village, Upper Chitral. Asking people, and especially elders, to tell stories about what happened during major natural hazards they experienced or that they heard of from other people who witnessed hazards is an efficient way of collecting information related to local knowledge on disaster preparedness – especially in cross-cultural contexts. In many cases, it takes time for people to tell stories. It is therefore more efficient to visit people more than once to gain their confidence and revive their memories.

Proverbs, songs, and traditions

"The flood comes the way it has come in the past." (Local proverb narrated by Dr. Inyatullah Faizi, Chitral College)

"A river always remembers its way." (Local proverb narrated by Dr. Inyatullah Faizi, Chitral College)

"We used to have a song related to the flood that took place 100 years ago. It described how the flood destroyed the beautiful land of the village. Nobody remembers it now." (Elder, Panan Deh, Reshun gole, Upper Chitral)

"Folk songs and stories are less documented here than in the rest of Pakistan because of the lack of political backing and the diversity of local languages." (Prof. Faizi, Chitral College)

"'Lavak natek' is part of an important Kalash festival held in December called 'chitermas'. Men and boys go down the mountains shouting and making a noise. If they see a fox, it is a sign of a good year. During that time, women watch the scene from the village." (Kalash elder, Birir village, Birir Valley, Lower Chitral)

"When it rains a lot or when it does not rain at all, Kalash men, including young boys, go up to the mountain to sacrifice a goat." (Kalash elder, Birir village, Birir Valley, Lower Chitral)

Herders of Chitral: The Lost Messengers?
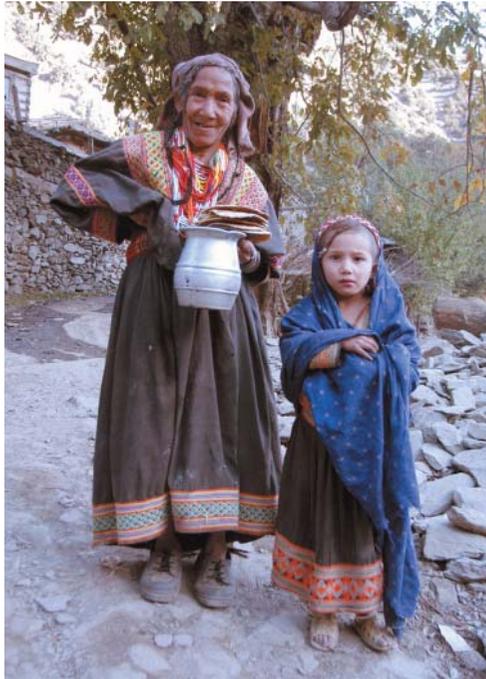
Mats Eriksson

Figure 18: Kalash elder and child, Bumburet Valley, Lower Chitral. Local knowledge is always a mixture between experiential knowledge (knowledge gained through one's experience) and transmitted knowledge (knowledge gained through transmission in such things as stories, poems, songs, and religious practices). Transmitted knowledge allows for the transfer of knowledge between different generations, including the youngest generation who may not have witnessed flood hazards. Transmitted knowledge does not suffer the same problems of legitimacy in a community as experiential knowledge, because it has often been deeply internalised into people's daily practices and beliefs over generations.

At village and household levels, people learn about flash floods and share information about them, mainly orally. Elders and other key knowledge carriers (e.g., local religious leaders) in the community transmit their experience of past natural hazard events through local and family stories, proverbs, and songs. The role of the elders is crucial as some have learned from previous experience how to read environmental signals; they know the history of previous disasters, when and where they occurred, what was the level of the water during the last flood, and so on. Folk stories, songs, proverbs, and ceremonies may not be entirely dedicated to hazards but may incorporate elements about them (e.g., references to hazards or hazard warning signs through symbols). Human memory is short: folk and family stories, songs, proverbs, and ceremonies contribute to remembering past events in the community as well as what to do or not to do (rules) and they help to pass on the information to other generations (transmitted knowledge). They act as real repositories of collective community and family memories. However, social memory of prior flood disasters is fading over time, especially if something happened a long time ago, as illustrated by the loss of the song in Reshun Gole. Further, with the increasing rate of change, what is communicated by the older generation might not feel relevant to the younger generation.

Collective ceremonies may simulate elements of natural disasters through symbolic actions (e.g., running down from the hills and shouting) and act as cathartic events for the whole community.

Ceremonies, such as the 'lavak natek' in the Kalash community, are a symbolic means of dealing with anxiety. This festival can be interpreted as a collective forecasting ceremony; a way of helping the community overcome the anxieties associated with future uncertainties (including uncertainties about the weather and natural hazards). The ceremony helps to reduce stress and the psychological distress associated with living with risks and uncertainties. It is a means of incorporating these times of great stress and loss into a community's collective memory in such a way that they are rendered more manageable on an individual human scale. Such ceremonies permit the incorporation of hazards into daily life within the structure of people's everyday cultural construction of reality, and they can contribute to the normalisation of natural hazards (Bankoff 2004). At the same time, some beliefs and related practices can also act in a negative or dysfunctional way. For instance, the ritual of slaughtering goats to prevent floods in the Kalash communities may prevent the community from carrying out some essential tasks for flood preparedness. This ritual also confers on goats a cultural and symbolic value and function, but might place limitations on having sufficient food and a means of securing finances during and following hazard events. According to a local saying, *"the death of a Kalash is the Kalash destruction"*; which refers to the tradition of slaughtering the entire flock for ceremonial purposes when a Kalash person dies. Basically in the Kalash culture, goats are kept for ceremonial purposes and are never sold (no economic value is attached to goats) (Personal communication, Mr. Aziz Ali).

This example demonstrates how local beliefs and practices can have both positive and negative effects in terms of disaster preparedness.

Traditional early warning systems

Mirror and traditional fire systems (phumbarash)

"The mirror system was a visual signal system used before the British period. Local people used the reflection of the sun on a mirror to convey warnings (including warnings of floods) to other people and villages." (Workshop participant, Chitral town, October 2006)

"A local system of signalling by beacons is organised by the local inhabitants from the Baroghil Pass to Mastuj and from the Dorah Pass to Chitral. They are prepared on war becoming imminent or if a serious flood is expected. The village nearest to the beacon's site is responsible for its preparation and lighting." (British Military Report and Gazetter on Chitral 1928)

"This system was used before the British period. Until the thirteen century, the fire system was efficient and quick. The system worked well in case of floods due to the breaking of lakes formed by the glacier tongue blocking the river ('chatiboi') but the system was not quick enough for flash floods triggered by heavy rainfall. After the thirteenth century (when Islam

came to the region), this visual signalling system became a parallel system and was slowly replaced by other means of defence (including warning signals): the call for prayer system [see below] *and later on the wireless warning system (i.e., code system) introduced in 1895 by the British."* (Personal communication, Prof. Faizi, Chitral Town, November 2006)

Call for prayer system (azan)

"Most villages have a mosque. Any call for prayers outside of the regular daily prayer times is used as a warning system (including flood warning). This system is still in use today." (Personal communication, Prof. Faizi, Chitral Town, November 2006)

Herder system (pazhal)

"Each clan within the Chitral District used to have a herder in charge of taking the livestock to the pastures during the rainy months from June-August. It was a collective system based on reciprocity. The herder used to be a person from the village itself and had strong socioeconomic ties with the community. Sometimes the herders happened to be at the right place at the right moment to communicate the imminent danger of flash floods to communities lower down. They would shout the message to another herder in a lower pasture or to the nearest village if possible. Different herders would choose different places in order to spread the flocks evenly on the available grazing land. This way, they could also warn each other. A

few of them also knew how to blow the 'booq', a trumpet-like instrument made from the horn of a yak or a wild goat. Rhythms and tunes would vary from valley to valley, village-to-village, and herder-to-herder conveying different meanings. For instance, a certain tune could indicate that the herder was ready to take the livestock up to the pastures and that villagers should release their animals; another tune would indicate the return of the flock to the village. In some cases, specific tunes would also warn of the danger of predators and of the danger of floods and avalanches."* (Personal conversation, Prof. Faizi, November 2006)

Shouting, whistling, and running downstream

"People from villages higher up warned us by whistling and shouting that the flood was coming." (Group discussion, Shainigar village, Drosh, Lower Chitral)

"In the village of Uchusht a flood occurred in 1993. The flood first came with moderate intensity. Then the flood stopped. As people started collecting fuelwood a high intensity flood came and washed away four people. The person warning the others became a victim of the flood." (Group discussion, Workshop on local knowledge, Chitral, October 2006)

These traditional warning systems of imminent hazards have something in common: they are all set up on an ad hoc basis

(not systematically) and they are all used **indirectly** as flood warning systems. For instance, the mirror and fire systems were first and foremost traditional ways of defence and the call for prayers is first and foremost related to religious activities. Thus, the traditional warning system was based on a diversity of strategies related to military, religious, and pastoral or herding activities. This combination of systems was probably a weakness as well as a strength of the system. One advantage is that the diversity of strategies using both visual (mirror and fire systems) and audio (mosque and herders) means of communication allows the system to be kept flexible enough to adapt to a diversity of contexts.

Different warning systems are required for different types of flash floods and for different types of environments. In some places and contexts, one warning signal will work better than another according to the nature of the hazard, the distances between the lower and high pastures and between villages, the shape of the valley, the density of the vegetation, the relationship, location, or distribution of other villages, day time or night time, and so on. For example, many stories report how the herders were too far away from the villages to give the warning and/or the event happened too quickly. The traditional warning systems were also very well adapted to and in tune with the local sociocultural context ensuring some level of acceptability and trust and cost effectiveness (e.g., use of the mosque).

Local early warning systems in 2006

"The old system is gone and the new system is not working!" (Workshop participant, Chitral Town, November 2006)

"The Reshun River in Reshun village is prone to recurrent floods every year. On one sunny day, the stream started to flood high up on to the pasture. No one in the village lower down had any idea that a flood was coming except one of the villagers who had taken the goats for grazing on the high pastures. He warned the villagers lower down with his cordless phone. People were able to move to safe areas. Nobody died but the flood washed away people's crops and property." (Narrated by Sher Murad, Reshun village, Upper Chitral)

"Technology has taken over but not in Chitral!" (Workshop participant, Chitral Town, November 2006)

"There are still a few herders on the pastures but they are vanishing. People lower down are not listening to them anymore. Youths go to school and men work at the market." (Mr. Aziz Ali, District Manager, IUCN-Pakistan Chitral Unit IUCN Chitral)

"The traditional early warning system was perfectly fine. The herders used to pass on the message to the communities. They used to shout and it was very efficient." (Workshop participant, Chitral Town, November 2006)

Herders of Chitral: The Lost Messengers?

The first quote nicely sums up the present dilemma in Chitral. The district is now in a transition period, leaving many villages in an institutional vacuum. Most of the traditional early warning systems have disappeared due to a combination of socioeconomic, geo-political, technological, land-use, and perception factors and changes. The progressive disappearance of the herder system from the 70s onwards, for example, illustrates how each of these factors come into play and is shaping the current changes in a complex manner. Since the 70s, new opportunities have been opening up with the spread of education, increased access to markets, and introduction of cash money. With the increase in income diversification (especially through government jobs) men have less incentive to work in the pastures (personal communication, Aziz Ali, IUCN-Chitral). Further, following the Afghan War in 1982-83, Afghan refugees provided cheap labour for this type of job. *"The Afghan system was itself a hazard. It contributed to the degradation of the pastures. Compared to the traditional system, it was more individualistic and based on loose ties with the communities"* (personal communication, Prof. Faizi, Chitral Town). Progressively, a rotational grazing system ('sotseri') on a household basis replaced the herder system. The situation now varies from village to village and valley to valley. For example, in some villages, the people themselves accompany the livestock to the pastures for two to three months. In other places, people hire a herder for the whole village. Many people assume that the herders contribute to the degradation of the pastures due to overgrazing by goats. Goats are often

associated with deforestation and increased flash floods and in many places there is a ban on goats. Another strong (and common) perception or belief is the faith in technology to resolve all issues. Ultimately, this belief may influence people's willingness to take risks: they may take more risks because they rely upon external technology and help.

The new early warning systems rely upon scouts' sirens, telephones, and information delivered by the central government through the Flood Forecasting Division of the Meteorological Office in Lahore based on data from radars and satellites. However, new technologies have limitations. Firstly, although they provide relatively rapid means of communication, not everybody can benefit from them. The early warning systems might even contribute to increasing socioeconomic disparity among households and villages because not every village and household can have access to, or more importantly benefit from, the new technologies and information delivered by them. Shouting and whistling is still the most common form of communication used today. Secondly, the scouts' sirens are only posted in the Chitral and Mastuj areas. They do not reach all the villages. Due to the rapidity of flash floods, the Chitral scouts are mainly able to release post-hazard warning signals. Thirdly, the diversity of communication strategies and options has been replaced by technological solutions that are centralised. People are now more dependent on external technologies and external experts, which may be contributing to a reduction in their flexibility, adaptability, and creativity and

Arun B. Shrestha

Figure 19: Abandoned scout watching post (centre) above the village of Drosh, Lower Chitral. The scouts in Pakistan are a different institution from the scouts in western countries. In Pakistan, they are a paramilitary force. Since 2004/5, all scouts' watching posts have been closed down due to improvements in security in the district. Today, the scouts are only based in Chitral and Mastuj (Upper Chitral). This centralisation of the scouts in the district also means that they contribute more to relief aid and less to disaster preparedness.

to the development of dependency. People are becoming more dependent on the government; they do not fall back on the traditional systems anymore.

With the end of the traditional herder system, vertical communication (and also monitoring) between the high and low pastures and between the pastures and the villages has probably diminished as less information flows between them than heretofore. Further, livelihood diversification through seeking employment outside the villages may also influence horizontal communication (e.g., possible changes in roles and/ or relationships between and within villages, between and within households, between men and women). On the one hand, men and women may be travelling more and may therefore be more exposed to other (flood) stories from which they can learn. On the other hand, men are away and less present to observe and monitor their local surroundings (while women are still mostly working inside the house). Overall, this subject, and especially the importance of the fire system and of the herder system, is very controversial and no consensus exists among local people about the relevance of the traditional warning systems. The various hypotheses raised here on the impacts of change show the complexity and the diversity of the situation. More research is required to test these hypotheses.

Box 4: Did you ask? Communicating about natural hazards

What are the local stories about previous flood experiences? Who knows about these stories in the community? Do people know about local songs, proverbs, and poems related to past natural hazards in the village? How is knowledge on natural hazards transmitted among community members (between different social groups – men versus women; leaders versus followers) and between generations (i.e., between elders and youngsters)? What are the strategies that help people to reduce the stress related to future natural hazards? To what extent do local ceremonies and beliefs help people to reduce their anxiety and/or increase their anxiety about future hazards?