Village Studies

Animal husbandry, including sheep rearing, orchard raising and village industries (mainly wool spinning and weaving) play an important role in sustaining the population of the area.
The livestock census of 1977 estimates a total live stock population of 4,94,313in the district. The quality of stock is poor and the milk yield very low.

Various minerals are known to occur in the district but they have not been exploited. There are no registered factories except one medium scale concern in Augustmuni in the Public sector. In addition, about 850 small scale factories are registered. Namdas, tweeds and blankets are the chief products; basket making, mat-weaving and wood-craft are other important cottage industries.

Amenities

There are 1,633 (1516 inhabited) revenue villages in the district and 14 (13 inhabited) forest villages. Niti village of Joshimath tahsil is the largest village occupying an area of 16,566 hectares. The smallest village are Saran Lotion (Ukhimath) and Patabungi (Karnprayag) each spread over an area of 0.40 hectare.

Table (5.6): Distribution of Villages in Chamoli District according to the Availability of Different amenities (1981)

Tahsils	No. of inhabited villages	Percentage of villages having one or more of the following amenities					
		Education	Medical	Drinking Water	Post & telegraph	Approach by pucca road	Power supply
Joshimath	87	72	9%	100%	32%	22%	13%
Karnaprayag	738	47	10%	100%	16%	4%	11%
Chamoli	379	50	12%	100%	16%	6%	17%
Ukhimath	312	51	8%	100%	13%	16%	25%
Total	1,516	50	6%	100%	17%	8%	16%

Source: Census of India 1981, Village and Town Directory, Chamoli

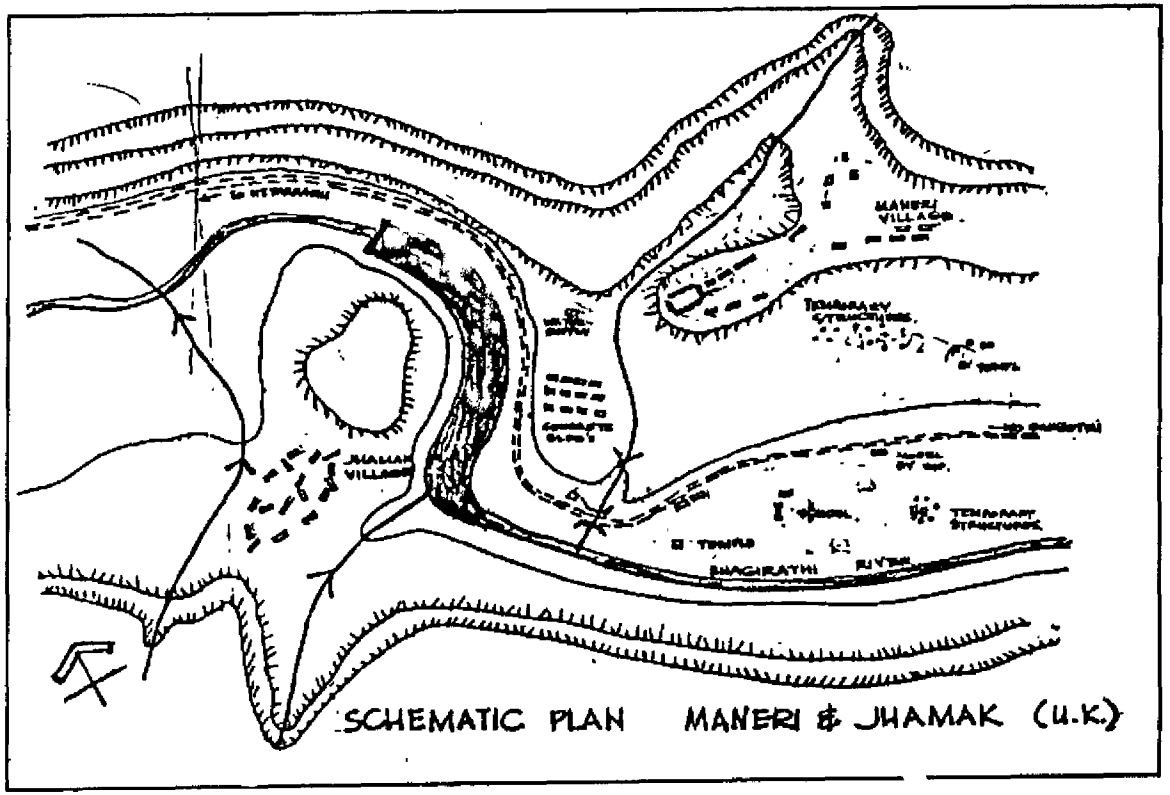
Village Maneri, Bhatwari Tahsil, Uttarkashi District

Maneri is a medium size village of 114 households located at the top and bottom of a ridge overlooking the road from Uttarkashi to Gangotri. It had 70 houses with more than one family per house. The village overlooks the Maneri reservoir and hydro-generation plant which has suffered superficial damage.

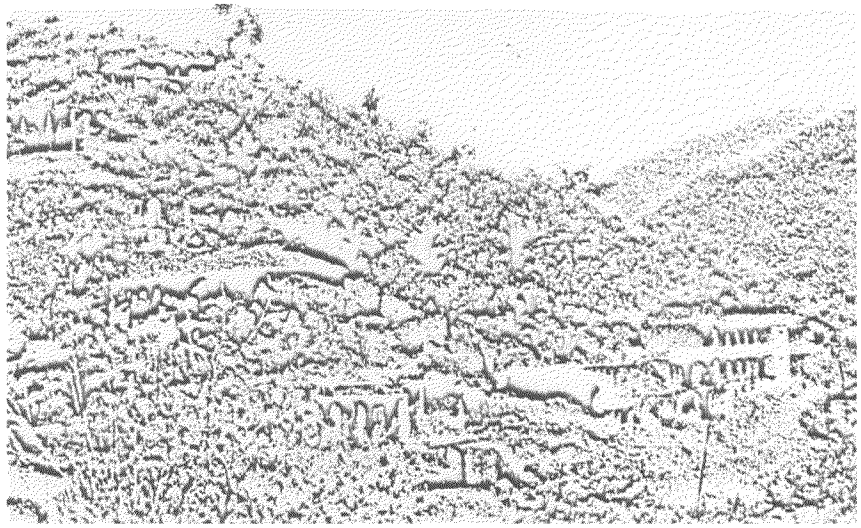
Location

This village is situated on an outcrop near the confluence of a local stream and the Bhagirathi river. The old village and the temple is situated around the highest point on the outcrop. More recent, buildings are situated along the slopes on both the tributary and main valley.

This village comprises two hamlets that stand around 20 m. above the uppermost river terrace. Two distinct levels of terraces can be observed. The road, a temple, school, inter-college and other buildings are located on the lower terrace which is 8 m. above Bhagirathi river. Agricultural fields, another temple and a few houses are located on the next terrace which is 20 m. above the road level. The village is situated around 30 m above this terrace.



All buildings in this view have either collapsed or are severely damaged. The major causes of failure are a combination of collapse of stone masonry in mud mortar and settlement of foundations. Maneri is located within the epicentral tract and experienced both strong vertical and horizontal displacement during the earthquake.



A view of part of the devastated village of Maneri, Bhatwari Tahsil, Uttarkashi District.

Geology

The country rocks are phyllites, schists and granitic gneisses. The weathering is moderate and the soil cover is thin and variable over the main village.

Occupation structure

That Maneri is a relatively prosperous village is evident from the extensive agricultural land that it has and the type of housing. Agriculture is the main occupation, with wheat, paddy and *ramdana* being the main crops. Oranges, Malta and Banana fruit trees are also grown.

The village has a considerable amount of livestock with 200 cows, 100 bullocks, 25 buffaloes and 6 mules. A number of cattle died during the earthquake, as they plunged down the hill in panic. A few more are being killed every week by a roving leopard, because of inadequate shelter.

Infrastructure

Medical facilities in the village are good both because of its proximity to the road and the presence of the Maneri dam colony: allopathic and ayurvedic clinics are available. The allopathic clinic along the road was severely damaged with the concrete block shear wall failing completely.

A senior secondary school and inter-college are located between the river and the road, below the village. The buildings of both institutions have either collapsed or are have been severely damaged. Rubble clearance and reconstruction operations had been initiated by the NSS, ONGC and other voluntary agencies.

Local building materials

The local building materials used are mainly phyllite blocks with some quartzites and gneisses for walls. Block sizes are highly variable but small sizes are more common.

Local construction workers

There are two carpenters who live in the village, while masons are hired from other villages.

Materials of Construction

Table 6.1 Village Maneri: Estimated Structure of Housing Stock (% to total houses)

Material of Wall	*Material of Roof*				
	Thatch on timber planks	*CGI sheet on timber planks*	*Slate on earth on timber planks*	*RCC*	*TOTAL*
Mud-pathri	15%	15%	**46%**	**20%**	**96%**
Timber planks	-	4%	-	-	4%
TOTAL	15%	19%	**46%**	**20%**	100%

Source: TARU field appraisal

The predominant walling material in the village was mud-pathri (96%), the rest (4%) were in timber planks. The predominant roofing material was Slate (46%); followed by RCC slabs (20%); CGI sheet (19%) and thatch (15%). The single largest class of houses was Slate roofs on mud-pathri walls followed by RCC roofs on mud-pathri walls as presented in the table above.

Damage

The damage in Maneri was very high because of its proximity to the earthquake epicenter. The total number of houses in the village is 70 of which 90% have collapsed or are severely damaged. The remaining 10% are heavily damaged. Twenty-three people died of which 15 were children, 7 youth and one old man. Over 50 people were injured.

The main settlement was found to be completely deserted, only one old woman was observed in her house during the survey. The rest of the village are staying in two small clusters of emergency shelter that they have constructed for themselves. These are built with a wooden pole frame with plank walls and roof cladding. Some families have laid CGI sheet on this and a further layer of tarpaulin to provide some insulation. The cracks between the timber planks have been filled with cowdung and straw, and a mud and cowdung floor laid.

Reconstruction

Alongside the inter-college compound the VHP had partially completed a model shelter for reconstruction in late December '91. This is made out of a two-storey, tubular mild steel welded and braced frame, with a ground floor of Stone in mud-mortar and Stone block masonry. An intermediate floor is in timber planks. The top floor walling was planned to be built in timber planking or reed mat. The roof was in timber planking and CGI sheet cladding.

There are more than one household living in many of the emergency shelters. Cattle are also accommodated in some of the shelters, both to protect them and heat the space for the humans.

Risk

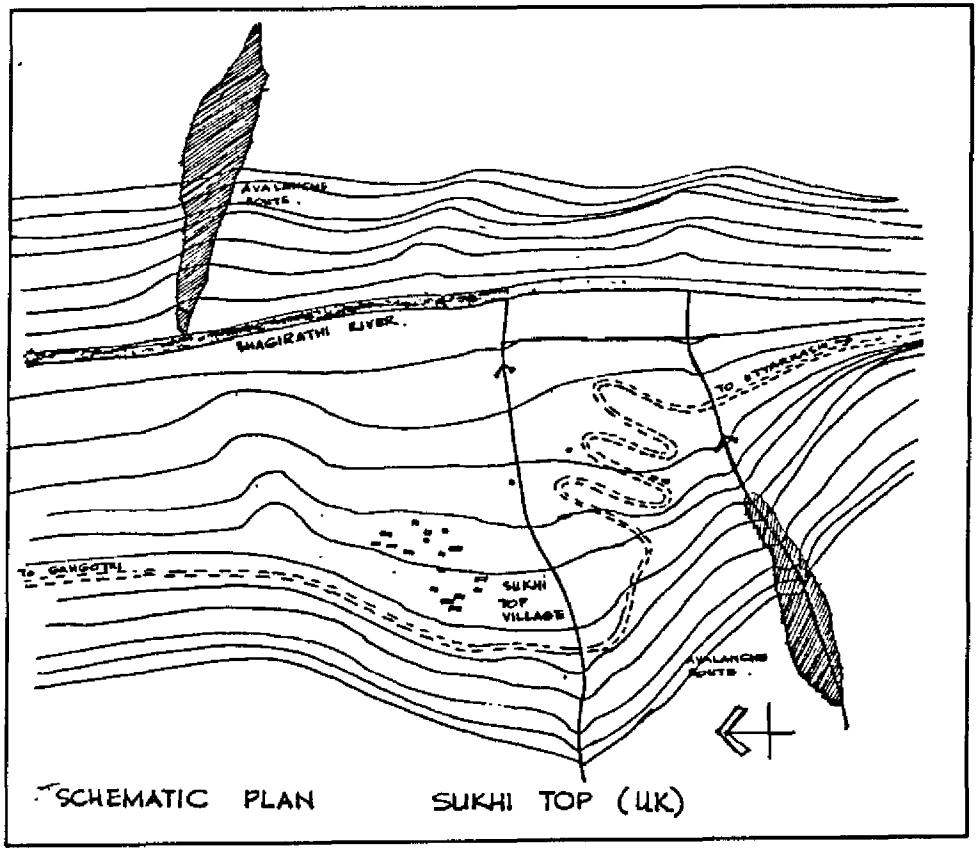
This village is comparatively free from landslide risks even though minor landslips on terrace edges cannot be ruled out. The first terrace may not be suitable for construction considering possible flash floods.

Village Sukki, Bhatwari Tahsil, Uttarkashi District

Sukki village is located along the Uttarkashi-Gangotri highway around 18 km from Gangnani. It is a medium size village of 103 households located at an altitude of 3,000 above msl. The total number of houses in the village is 50, with more than one household living in a house.

Location

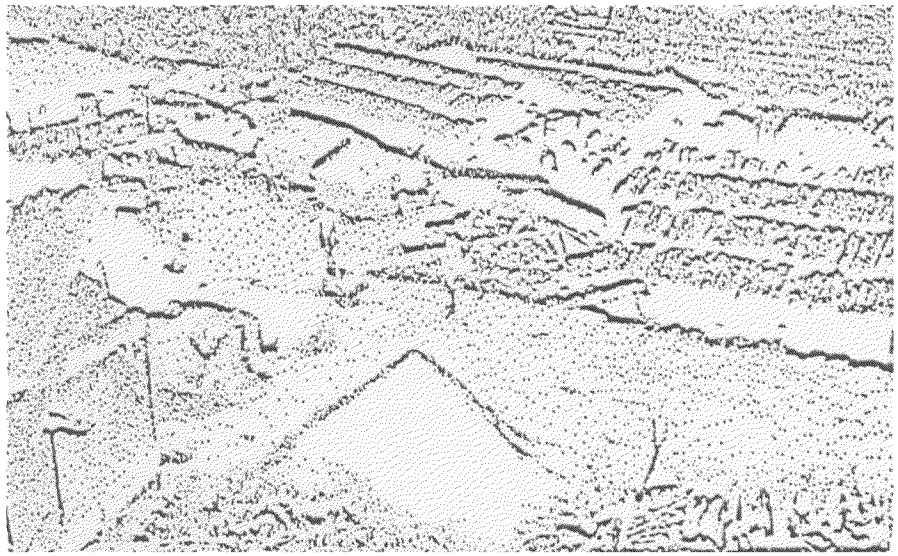
The village is situated on steep colluvial slopes, with the bulk of the houses in the village area clustered on the edge of a ridge overlooking the river Bhagirathi. Two small clusters at lower elevations housed scheduled caste households. The present village site is fairly stable. A minor avalanche route is seen around 700 m from the village site. The high elevation of the village, results in it being cut off over the winter months with over 2 m. of snowfall.



Geology

The country rock is sheared granite gneisses and amphobilites. Augen gneisses are also common. Weathering is highly variable and few zones of liquification of soils are seen nearby. Soil depth is highly variable and few large boulders were observed above the village. The soil moisture is comparatively low and seepage was not observed.

A typical flagstone court in Sukki village with houses arrayed around it. Even though this is a remote and poor village, the traditional Garhwali village layout is followed closely, with the settlement extending outwards from a central court and the village temple. The use of timber as the roof cladding can be seen in the photograph along with two slate roofed houses. The average snowfall during winter touches 2 m. hence the need for paved court areas. Note the emergency shelters built with tarpaulins and CGI sheet in the centre background.



Flagstone court in village Sukki, Bhatwari Tahsil, Uttarkashi District.

Occupational structure

The primary occupation of most villagers is animal husbandry with over 500 cows and over 2,500 goats and sheep. They sell wool at Rs. 40-50 per Kg. A few households weave blankets during the lean season. A number of households have apple trees on their land. A good apple crop yields Rs. 400-500 per tree. Others families grow some Potato, *Rajma* and *Koto*.

Infrastructure

The village has one primary school, which has been severely damaged in the earthquake. The central wall had shattered and buckled, and a portion of the foundation had settled. It also has a panchayat ghar that has suffered heavy damage.

The nearest primary medical facilities are at Harsil, while complicated medical problems are treated at Uttarkashi.

Local building resources

Angular granitic boulders are the common building materials used for walling. The block sizes are large and suitable for stone masonry. Slate cladding is transported from the lower elevations in the valley is used extensively for roofing.

The bulk of the wood used in construction is *deodar*. There are "Pine Chir" forests fairly close to the village.

Construction workers

There are no traditional masons or carpenters in the village. They either come from adjoining villages or from the Uttarkashi area.

Materials of Construction

Table 6.2 Village Sukki: Estimated Structure of Housing Stock (% to total houses)

Material of Wall	*Material of Roof*				
	Timber planks	*CGI sheet on timber planks*	*Slate on earth on timber planks*	*RCC*	*TOTAL*
Mud-pathri	**53%**	-	17%	4%	**74%**
Timber planks	**20%**	6%	-	-	26%
TOTAL	**73%**	6%	17%	4%	100%
Source: TARU field appraisal					

The predominant walling material in the village was mud-pathri (74% of the walls), followed by a considerable proportion of timber plank houses (26%). The predominant roofing material was Timber (73%); followed by Slate (17%); CGI sheet (6%) and RCC (4%). The single largest class of houses was Timber roofs on mud-pathri walls (53%) followed by Timber roofs on timber walls (20%) as presented in the table below.

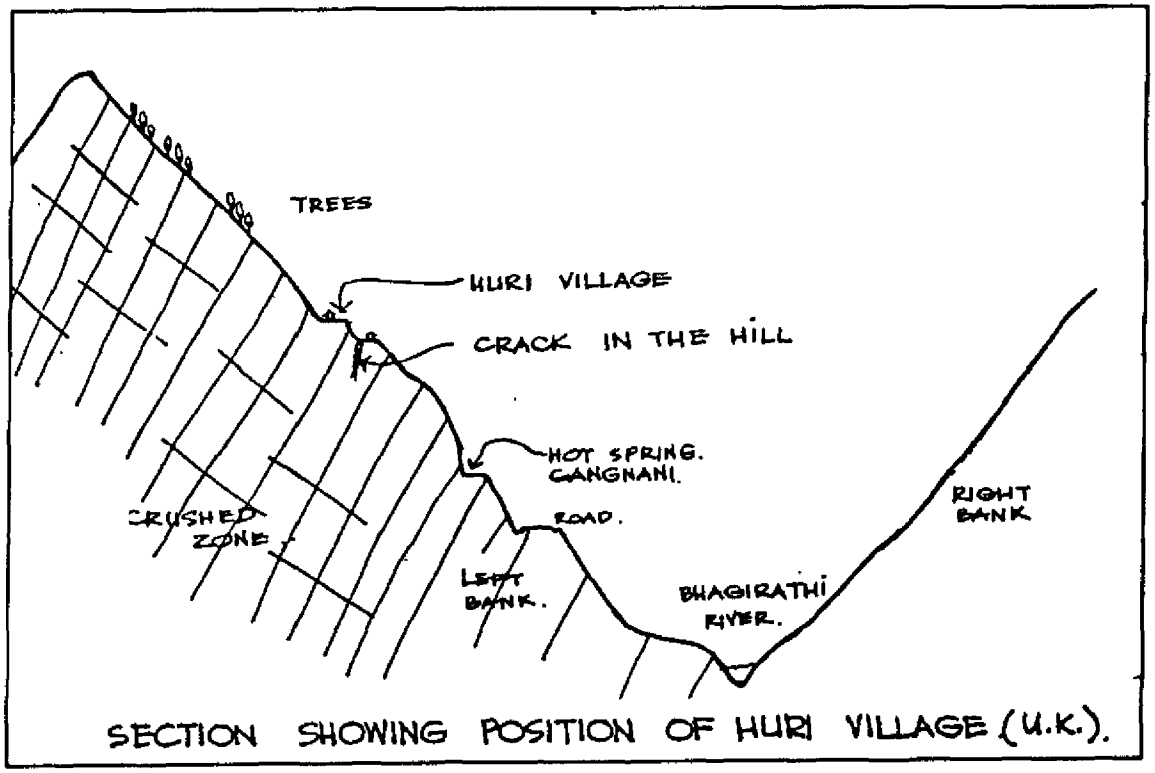
The price of cement delivered in the village is over Rs. 150 per bag and steel Rs. 1250 per quintal.

Village Hurri, Bhatwari Tahsil, Uttarkashi District

Hurri village is located 500 m. upslope of Gangnani hotsprings on Uttarkashi Gangotri road. It is a small village of 45 houses located at an altitude of 2,000 above m.s.l. with a population of 60 households.

Location

The village is located on a stabilised landslide with slopes of upto 50 degrees. The terracing of the area is low with most cropping being done on the slip surface. The old village and central court with the temple is situated on an outcrop jutting out of the slope. The more recent buildings are situated on less stable parts of the slope.



SECTION SHOWING POSITION OF HURI VILLAGE (U.K.).

Geology

The site consists of a deeply weathered granitic rock which has undergone extensive shearing and has developed well defined secondary foliation due to shearing. Soil depth varies between 0.5 to 1.5 m. depending upon the slope. The water-content in soil is quite high due to seepage from shear planes and a perennial nala originating around 2 km. away. This site is surrounded by fossil landslides and colluvial material is present on the slopes.