

2. The Karakoram Landscape and the Recent History of the Northern Areas

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The specific environmental conditions of the inner Asian mountain arc and its location in the arid belt framing inner mountain basins, plateaux and valley bottoms as desert-like structures are responsible for the typical landscape of the Northern Areas of Pakistan. The steep and deeply incised valleys linking the 'water towers of mankind' (as the glaciated regions are frequently referred to) with the low-lying plains of the Punjab on the southern side contrast with the smooth and gradual descent from the high passes such as the Khunjerab pass (4550 m) towards the Takla Makan desert (Tarim basin) of China's Xinjiang province or towards the Pamirian plateau. Consequently, we find a highly differentiated landscape composed of narrow and steep valley locations, wider basins with flat valley bottoms, pleistocene terraces and scree slopes linked to a dendritic tributary river network. Separated high pastures and forests are to be found elevated above these deserts and steppes. The enigma of this extreme ecological variation has confronted researchers for many decades and posed questions about the challenges faced by early settlers sustaining their livelihoods under harsh environmental conditions. Some explanations are given below.

ENVIRONMENTAL PROPERTIES AND ECOLOGICAL PARAMETERS

The Karakoram mountains (71°-79° E, 35°-36° N) petrographically and orographically form one major component of the Himalayan arc separating South and Central Asia. Traditionally, two toponyms have been attributed to this range in the Turkic language: Karakoram and Muztagh. The first derives from the expression for black gravel or black rock, while the latter refers to snowy mountains. Although it might seem to be a contradiction in perception, both terms reflect vital features of the geomorphology and glaciology which, on the one hand, offer weathered gravel and dark debris on steep slopes and pleistocene terraces in the valley bottoms and on the other hand are characterised in the upper zones by the most extensive ice cover outside the polar regions giving a rather luminous appearance in contrast.

With an average area of twenty-eight per cent glaciation and regional maxima up to forty-eight per cent (for example the Siachen glacier region) these snowy mountains differ significantly in ice coverage from the neighbouring Himalayas (eight to twelve per cent). The whole range of five hundred kilometres in length is only transected by river gorges at two points: the Shyok river in the east and the Hunza river in the west cut through the main ridge thus creating the canyon-like valleys with bordering flat river terraces and outwash fans/scree slopes. The deeply incised main rivers are difficult to tap for irrigation purposes as the elevation between water level and settlement terraces sometimes spans a vertical distance of more than one hundred metres. Traditionally, other solutions for the provision of irrigation water were found, such as the predominant utilisation of water from tributary rivers.

The Hunza valley has some of the steepest slopes on earth, leaving limited space for cultivation. Between the Hunza river at Altit (2100 m) and the Ultar I peak (7390 m) the average inclination of the slope is about sixty per cent. In Baltistan it is less and valley bottoms are in general wider. The alluvial sediments in the valley bottom at Shigar (2400 m) are responsible for the flatness as well as the remote mountain peaks of approximately 6300 metres altitude located twenty-five kilometres away, resulting in less steep slopes than in the Hunza valley.

The valleys represent a typical subtropical steppic high mountain environment with altitudinal zonation of vegetational cover. The classification of vegetational belts begins at the valley bottom with desert conditions. Next comes artemisia steppe, where most permanent settlements are located. Following the slope gradient upwards, one comes to humid-temperate stretches, where coniferous woods occur locally at northern exposures. Above this is found the zone of high pastures; an important economic resource composed of valuable meadows reaching upwards to the zone of perennial snow and ice.

Climatically the Karakoram mountains form a barrier between the monsoon dominated lowlands of the Indian subcontinent and the arid belt of Central Asia with its huge desert basins of the Tarim and Fergana. The Karakoram valleys are thus affected by a monsoonal climatic regime as well as by westerly depressions forming a transition zone. In the vertical dimension, extreme differences of precipitation conditions have been recorded between arid, desert-like valley bottoms and the humid nival zone, thus separating potential settlement regions from those where sufficient humidity is available.¹ The total annual precipitation in the Hunza valley at Karimabad is as low as 145 millimetres on average; in Skardu it is around 210 millimetres and consequently ranges well below minimal requirements for rain-fed (*barani*) cultivation. On the other hand, measurements of ablation and related calculations suggest maximum precipitation at five thousand metres altitude of approximately two thousand millimetres.

The significant difference in gradient explains the desert conditions in the villages and the enormous glaciation in the upper elevations, the typical environmental feature of the Northern Areas of Pakistan with high rising peaks such as K2 (8611 m), Hidden Peak (8068 m), Broad Peak (8047 m), Gasherbrum II (8035 m), Nanga Parbat (8126 m), Rakaposhi (7788 m) and Disteghil Sar (7885 m) towering above the arid valleys.

Seasonal average temperatures vary by an amplitude of 25 °C, with maxima in July/August and minima in January. In a glaciated region like the Karakoram, these variations determine and activate the volume of available meltwater for irrigation in the valley bottoms. During summers, the Hunza river offers fifty-two times more water than during winters, the extremes of run-off in the Shigar river varied in 1986 by a factor of 87.² These extremes apply in a similar manner for the Gilgit, Upper Indus and Shyok, all of which derive their major discharge from glacier melt. The period of seasonal meltwater release relates to the climatic conditions and determines in connection with the altitudinal location of settlements the length of the cultivation period for crops in these irrigation oases.

The average duration of annual growing cycles ranges from 307 days for Gilgit (1450 ml), 260 days for Karimabad (2300 m), 250 days for Shigar (2400 m) to 195 days only for Misgar (3102 m). Relief, availability of meltwater and flat land, as well as a sufficiently long vegetation period in different locations (al-



Fig. 31. The Hunza valley at Gojal with the Tupodan peaks in the background.

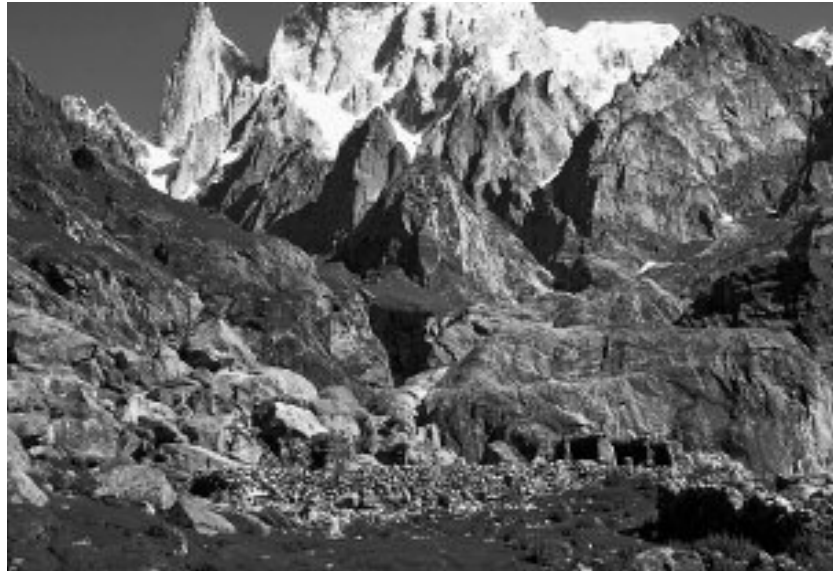


Fig. 32. The Utrar high pasture above Karimabad, overtowered by *Bubulino Tin*, the pin-needle mountain.

titude, aspect), form the parameters for the possibility of establishing sustainable irrigation oases in the Karakoram. The storage capacity of the mighty ice towers is tapped and meltwaters are deviated towards irrigated fields in locations which compose ecological and agro-technological niches with favourable conditions for crop farming. Thus the irrigated oases of the Karakoram are located on river terraces, outwash fans and scree slopes in the arid low-lying valley bottoms. They allow a maximum utilisation of the limited vegetation period where the provision of sufficient meltwater from side valleys is safeguarded through a highly sophisticated network of irrigation channels. Overall these cultivated areas cover less than one per cent of the Karakoram mountains, at the same time forming the focal points for human settlements and livelihoods.

Interrelated to intensively farmed irrigated oases are seasonal pastures incorporated into the system of combined mountain agriculture to be found as the dominant agro-pastoral strategy in the Northern Areas of Pakistan.³ Combined mountain agriculture has the advantage of simultaneous fodder production in the permanent homesteads for herds which are grazed in the high-lying pastures during the summers. The limiting factor here is the provision of up to nine month's feed which has to be produced on private or common property village lands. The pastures are located in higher elevations where environmental conditions support the natural growth of shrubs and grass in the artemisia steppe and above. The extensively utilised pastures cover about half the area of northern Pakistan and can only be used during three to four months in the summer. The example of the Hindukush-Karakoram-Himalaya region shows not only that herd sizes can be increased by incorporating high pastures into the domestic economy, but at the same time the quality of natural grazing in the high pastures has been estimated as double to quadruple that in the lower zones of the arid mountain valleys. Consequently, the traditional settlement and agricultural production system utilise the salient features of the given environment which is at substantial risk due to a set of environmental hazards linked to the steepness of slopes, high relief energy, erosion processes and glacial movement.

A MOUNTAIN REGION FACED WITH NATURAL HAZARDS

For the last 170 years more than a hundred damaging events have occurred in the Hunza valley, recorded in archival sources, oral traditions, travelogues, reports, interviews and observations.⁴ The movement of glaciers has been the single most important factor of destructive forces accounting for nearly half of all recorded events. Glacial movements cause direct destruction when glacier advances lead to the covering of cultivated lands, irrigation systems and roads. More serious effects are generated from lake formations in the river valleys due to glacier advances and the forming of natural dams. Severe hazards occur when these glacier dams break and the water stored in the temporary reservoirs is released in huge floods. Ranked in second position are snow and ice avalanches, which are as influential as the combined phenomena of mudflows and rockslides. Weather related action from wind and thunderstorms has been of minor importance here. All these events have affected habitations, cultivated areas, roads and bridges to varying degrees. Earthquake-triggered mass movements have not been as damaging in the northern and central Karakoram valleys as compared to the Hindukush where most epicentres are located. The threat of destruction is mainly linked to glacier action and snow avalanches and, to a lesser degree, to mudslides and rock falls. The range of all these events is limited to comparatively small locations, while only glacier-related disasters have exerted supra-local effects.



Fig. 33. Precarious suspension bridge across the Hunza river, linking a remote village with the KKH.



Fig. 34. Rockfalls, landslides and avalanches are a permanent danger for the KKH road track cut into the mountain slope.

Taking the Hunza valley as an example of an area of high risk and occurrence of natural hazards it can be observed that there have only been four events which led to the complete abandonment of settlement sites during the nineteenth and twentieth centuries. The 1830 mudflow and glacier advances in the Chupursan valley were the most dramatic events since a whole tributary valley of the Hunza river had to be renounced for permanent settlement in consequence. All the villages were destroyed and covered under a thick layer of fluvial deposits. Only in the 1920s did systematic resettlement start again, continuing today. Less than two decades later, in 1858, the severe rock fall at Sarat and the damming of the Hunza river caused the flooding of all villages from Sarat to Pasu. In addition to the loss of village lands due to the undercutting of terraces, the newly-established village of Sarat was abandoned and only resettled after 1931.

During the same period a small settlement, Sholem (or Abdullah Khan Dasht), on the southern bank of the Pasu glacier had to be abandoned due to glacier retreat which resulted in dried-out channel heads cutting off the melt-water supply to the hamlet. It had never been resettled until the Aga Khan Rural Support Programme (AKRSP) recently undertook trials to bring irrigation water back to the valuable land. Further down the valley the village of Matum Das (meaning 'black desert') was abandoned in 1893

after a mudflow destroyed the irrigation channel and the settlement of people from Jaglot and Jutal. Re-named as Pratabsinghpura, and nowadays called Rahimabad, in 1905 the recultivation of Matum Das was begun by Hunza settlers, who managed to establish a new irrigation network and a prosperous village.

Considering the potential long-term risk of habitations in the Hindukush-Karakoram, the examples from the Hunza valley might explain the persistence of settlements despite a growing population and the expansion of villages. The cases from the Hunza valley represent a functional approach in view of site selection and persistence of habitations. The remaining data suggest that nearly all villages have been affected in different degrees by natural hazards resulting in loss of cultivated lands and destruction of irrigation and communication networks. Thus the resource potential of existing villages has been diminished by catastrophic events, which did not, though, destroy nuclei settlements that adapted different strategies to cope with the losses. Harsh environmental conditions have not stopped people from settling, cultivating and expanding the inhabited area and village lands from generation to generation. Who are the people who developed these coping strategies in such a harsh environment?

LINGUISTIC DIVERSITY LINKED TO IMMIGRATION AND SETTLEMENT

From a village survey⁵ of the languages in the mountain belt of northern Pakistan, some striking patterns immediately emerge within the surveyed region: the western and central part is dominated by Indic languages; in the centre we find two valleys where the only dialects of the isolated Burushaski language are spoken, while the eastern part is dominated by the Sino-Tibetan Balti language. Speakers from the Altaic and Iranian language groups are to be found in the northern border areas with Afghanistan and Xinjiang (China). More than twenty-five different languages belonging to the four above-mentioned groups have been recorded in the Eastern Hindukush and Karakoram. The corresponding, even more complex,

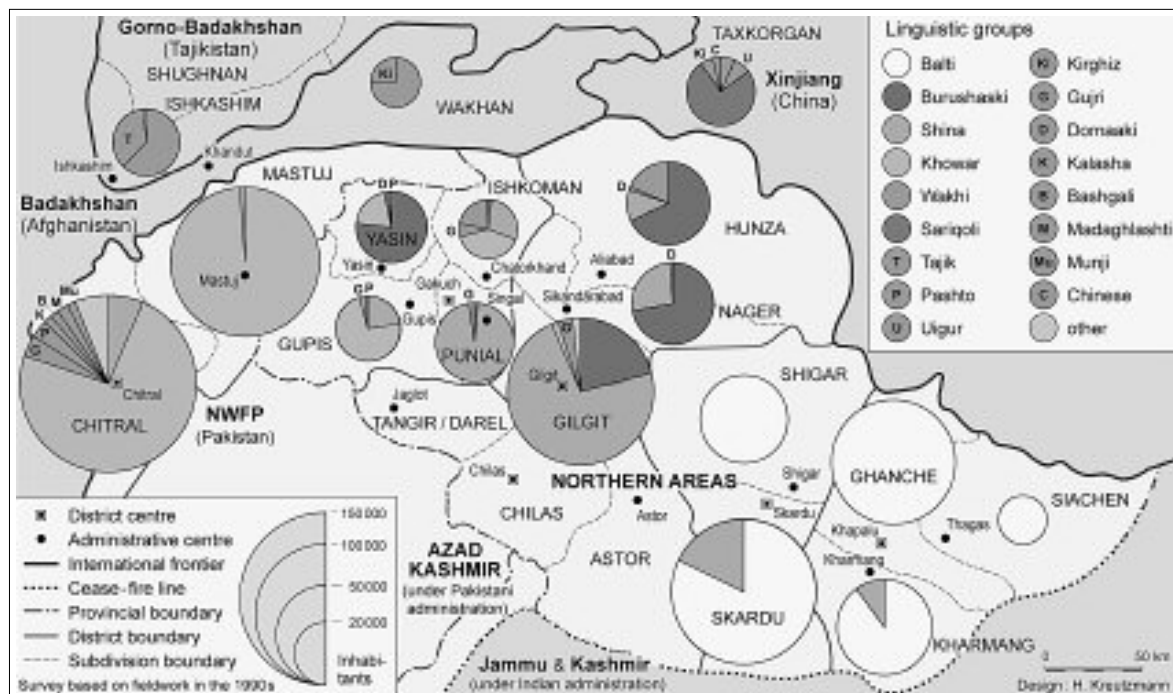


Fig. 35. Linguistic diversity in northern Pakistan.

spatial distribution patterns are still somewhat mysterious, but in an initial step some linkages between the origin and migration history of members of different language groups can be established. Basically four groups need distinction:

Autochthonous languages in compact settlement areas

The isolated language of Burushaski, confined to this mountain region, belongs to this category. No link to any other language group has been established so far. Karl Jettmar summarised the “...evidence suggesting that this other group [the Burusho] goes back to an antecedent stratum of immigrants or even the original inhabitants”.⁶ In his opinion it is most probable that the two Burushaski-speaking valleys of today – Hunza and Yasin – were once connected via the Gilgit valley and that Shina has superseded and replaced Burushaski there. In this category of autochthonous languages a similar role can be attributed to the Nuristani idioms which are mainly to be found in a compact area of diffusion in the Eastern Hindukush. Likewise Balti has to be added as the dominant language of Baltistan which, together with Purik and Ladakhi, forms the westernmost exponent of an archaic dialect of Tibetan. Traces suggesting an expansion, contraction or displacement of the distribution areas of these language groups have been presented from toponymic incongruencies and from narratives describing migration processes.

Indic languages of early migrants

Scattered information is available about the initial immigration of Prakrit speakers. Evidence is based on oral traditions and linguistic analysis. Most probably immigration started about a millennium ago and resulted in a process of occupying the lower parts of the valleys by the ancestors of the present-day Khowar, Maiyā and Shina speakers. Gilgit and Chitral became their political centres from which further settlements spread into the side valleys. Along with these migrants, Domaaki speakers arrived in the mountain belt and became prominent as the professional groups of musicians and blacksmiths. As professionals providing services they settled with Shina and Burushaski speaking groups.

Later immigrants and refugees from Eastern Iranian and Altaic language groups

During the last two centuries, scattered groups of refugees and migrants settled in various valleys of the Hindukush-Karakoram. In general, they were allocated cultivable land at the upper limit of settlements and have been instrumental in the expansion of the *ecumene* by converting pastures into cropped land. From Badakhshan speakers of Iranian idioms such as Munji, Madaghlashti and Wakhi, Turk refugees from the northern fringes, such as Uigur and Kirghiz, who found a temporary or permanent abode in those valleys must also be mentioned.

Immigration of Gujur nomads from the Indus basin

Following the transformation of vast areas in the Punjab into canal colonies the grazing grounds of Gujur nomads were reduced. As a consequence of these developments, which commenced in the second half of the nineteenth century on a big scale, Gujur nomads migrated to the mountain rim in search of pastures. This process of lowland-highland migration continues today. Some Gujur settled in Chitral and the Northern Areas.

The classification of established language groups in the Eastern Hindukush and Karakoram distinguishes autochthonous settlers and extra-mountainous/extra-territorial immigrants. In addition two more groups should be mentioned which have been important for recent migration processes:

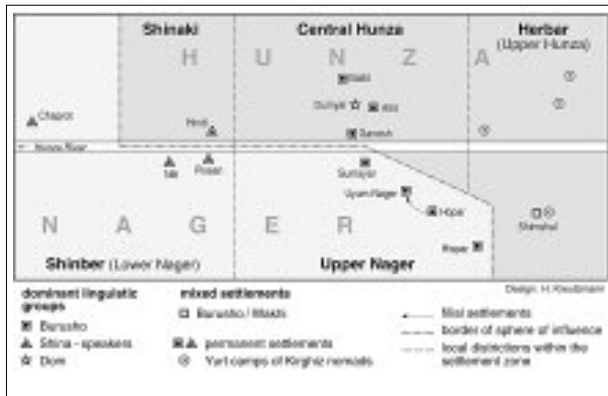


Fig. 36. Settlement patterns in the Hunza valley in the early 19th century.

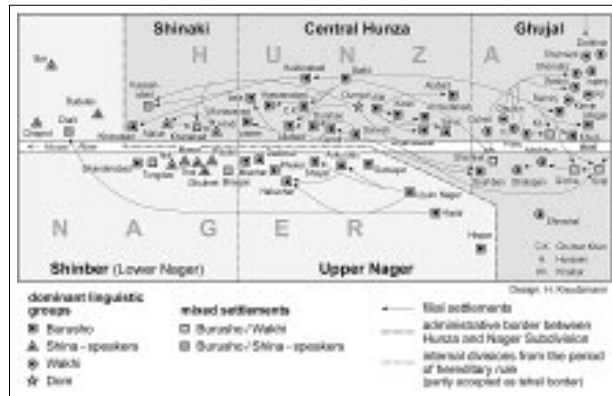


Fig. 37. Settlement expansion until the mid-20th century.

Intra-montane migration

In search of cultivable land and grazing grounds a significant migration within the mountain belt took place during the twentieth century and is continuing. New settlements were established in previously unoccupied territory either on barren terraces through irrigation or by converting temporary pasture settlements into permanent villages. Shina and Burushaski speakers from the Hunza valley migrated down river. Nowadays irrigation colonies are to be found in the vicinity of Gilgit town and as far away as Punial, Ishkoman and Yasin. A comparatively recent development is the migration of households to the commercial and administrative centres of Chitral and the Northern Areas in search of non-agrarian employment.

Temporary population exchange between lowlands and highlands

The quota of down-country languages such as Urdu, Punjabi and Pashto becomes statistically significant only in the few urban centres of northern Pakistan. There the percentage of households stating one of those languages as their mother tongues during the last census can rise to nine per cent of the resident population, while in the average of the rural areas it is only one per cent.⁷ Most of these temporary immigrants are either officers and bureaucrats on duty or entrepreneurs in the bazaars. In the other direction an increasing number of montane out-migrants seeks education, employment and business opportunities in the urban centres of down-country Pakistan. Taking into account the seasonal or temporary character of these migrations the unique and persistent position of this linguistic region is underlined.

Qualitative classification has shown the range of different language groups and their dominant areas of distribution as a result of settlement history. A quantitative analysis of the survey data supports the statement of regional linguistic centres of gravity. Balti is the dominating language in all subdivisions in the Skardu and Ghanche districts. More than a quarter million mother-tongue speakers have been identified during the survey. Thus this Tibetan language outnumbers Shina, the dominant idiom of the Gilgit and Ghizer districts. More than 150,000 inhabitants returned Shina while in the Gilgit district, including Hunza and Nager, Burushaski comes second. In Ghizer Yasin-Burushaski speakers (Werchikwar) trail the number of Khowar speakers, a fact which underlines the function of this region as an intermediate zone between Chitral and Gilgit. Over long periods Ghizer was under Chitrali rule and revenue schemes, resulting in the presence of members of the hereditary leadership and of settlers from Chitral. Four out of five persons in Chitral are Khowar speakers. In neighbouring Wakhan Woluswali (Badakhshan, Afghanistan), three

quarters of the population speak Wakhi while across the Amu Darya boundary in Rajon Ishkashim (Gorno-Badakhshan, Tajikistan) nearly two thirds belong to the same language group. In the contiguous Taxkorgan county (Xinjiang, China) Sariqoli dominates Wakhi. Both languages are related and belong to the Eastern Iranian branch. Wakhi settlement regions are to be found in the upper parts of the Hunza, Ishkoman and Yarkhun valleys. Next follows Gujri with local importance in the Gilgit subdivision and Ghizer. Smaller groups of Domáaki, Uigur, Kohistani and Pashto speakers, each of less than two thousand persons, reside in the Gilgit and Ghizer districts.⁸ Differentiated spatial patterns need an investigation on a large scale. Thus the development of settlement and society in line with linguistic variegation is presented in greater detail in a case study from the Hunza valley.

PRINCIPALITIES OF THE KARAKORAM: LEADERSHIP AND SOCIAL STRUCTURE

The development of settlements in the Karakoram valleys and the outline of irrigated oases are strongly linked to certain power structures, which reflect the initiative for amelioration of barren lands, domination of social groups and strength to levy taxes from comparatively poor mountain farmers. Irrespective of prevailing ecological conditions we find two distinguished sets of traditional social organisation in the rural societies of the Karakoram. In view of their structural origin and participatory hierarchies they have been termed principalities and republics.⁹ The basic distinction refers to semi-autonomous and independent principalities with hereditary rule or imposed/acquired external rule in the northern Karakoram valleys such as Gupis, Yasin, Ishkoman, Punial, Gilgit, Hunza, Nager, Astor, Skardu and Khaplu. Local *mir*, *raja* or *tham* dominated peasant farmers of differentiated social standing and executed control, levied taxes and requested forced labour services from rural households.

In contrast, the republics look back on a different historical experience of conquest. Following the Yusufzai Pashtun immigration and dominance in Swat and Indus Kohistan (since the fourteenth century) so-called acephalous or segmentary societies or republics have emerged in the mountainous interface between integrated lowlands and remote highlands, in this case the southern valleys such as Chilas, Tangir, Darel, Gor, Kandia and so on. These societies are traditionally based on an egalitarian social structure to which all landowners belong. Members of the landed class are entitled to be part of all decision-making processes dealing with distribution of land, construction and maintenance of irrigation channels and so on. Hereditary rule of a single family or dynasty is unknown in these areas. Every member of the in-group possesses equal rights. Counselling is done in the Pashtun-style *jirga*, a local assembly basing its decisions on overall consent. In addition to the landed class there exists a subordinated group of landless people which functions as labourers on the fields and as shepherds. Those immigrant people are excluded from decision-making processes and other forms of participation.¹⁰

In this respect Hunza is a well-understood representative of the principality type. Traditionally Hunza was under the rule of a *tham* who traced his background to the *ayasho* (coming from heaven), meaning coming from outside, that is from Gilgit, and not necessarily being part of the dominant autochthonous ethno-linguistic group of Burusho. Under their rule Hunza was segregated in seven sections (*maqsòò*). The Lower Hunza valley (Shinaki) formed one section, Central Hunza consisted of four *maqsòò* (Altit, Baltit, Ganish and the *thuaán khanánts*), while the upper valley (Gojal) was divided in two sections. This spatial pattern did not reflect the social standing in any respect. Self-esteem of the different ethno-linguistic groups was interpreted from these sections and contributed to competition and alienation. Burusho frequently per-





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1. View of the Nager valley with Deran peak in the background.

2. Villagers building a mountain track connecting the Karakoram Highway with Shimshal, in Upper Hunza.

3. Carvings of two giant figures at Khanbari (Bronze Age).

4. Carvings of animals in the Iranian style at Kino Kor Das (Iron Age).

5. Local girls trained by the AKCS-P documenting petroglyphs from the 'Sacred Rocks' of Haldeikish (Hunza).

6. Carving at Thalpan, showing a *stupa* with Brahmi inscription and Buddha enthroned on a lotus flower under the tree of enlightenment (6th-7th century AD).

7-9. High alpine landscapes. Above, Rush glacier and Rush lake. Below, a high pasture above Karimabad, with the Lady Finger peak in the background.



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10. View of the elevated plateau of Altit village, with the fort in the centre, the Hunza valley below it and the Nager valley in the background (see also pl. 15).

11. Irrigated and cultivated agricultural terraces reclaimed from rocky platforms (Hunza valley).

12. Drying apricots on the rooftops over old Altit village.



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13. The fortified village of Ganish below Karimabad.

14. Many old settlements in Hunza are built on steep terraced slopes (Karimabad).

15. The huge cliffs descending from Altit fort (below the clouds) into the Hunza river.



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16. The park-like apricot orchard belonging to Altit fort.

17. Harvesting millet, to be dried and stored for the winter months.

18. A girl on the rooftop of a house spreading out grains to be dried.



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19. The 'bowl' of Karimabad with cascades of agricultural terraces beneath the village and Baltit fort.

20. The old village of Ganish, encircled by a loop of the Karakoram Highway.







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21. Looking from Altit fort toward the Ultar range and the cliffs above the village plateau (see pl. 10 for opposite view).



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22. Agricultural terraces in Karimabad during the apricot blossom.

23. An isolated farmhouse benefiting from direct irrigation by the river.

24. Water from the glaciers to replenish the irrigation channels further down.



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25. Interior of a traditional Hunza house
(courtesy National Geographic Society).

26. Mama Zaibo in Karimabad (see p. 92).

27. Stone walls are an integral part
of the agricultural landscape (Karimabad).

28. Traditional settlement structure
with terraced houses below Baltit fort.



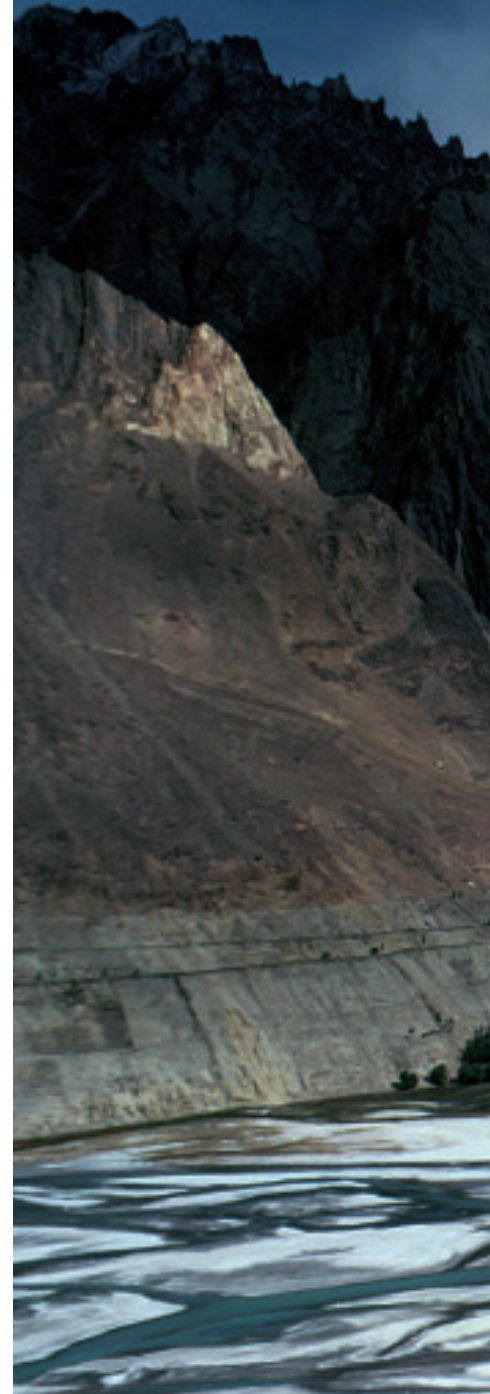


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29. Freshly harvested fields above the Indus river, between Hunza and Baltistan.

30. A side valley of the Shyok river, near Tagas, Baltistan.

31. Desert-like silt and sand deposits on the upper Indus riverbanks, near Skardu.



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32. Shigar village and the fort seen from above. In the background, the Shigar oasis and the silty plain of the upper Indus, the spine of Baltistan.

33. Typical village landscape in the Shigar oasis, with irrigation channels flowing through the densely planted settlement.



Fig. 38. Baltit fort – the seat of the *mir*s of Hunza – towering above the historic settlement of Baltit (now Karimabad).

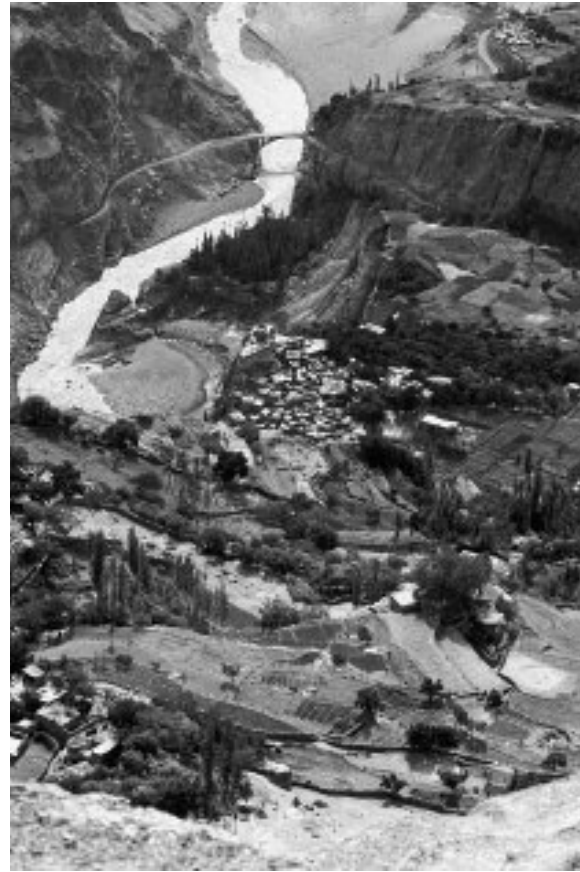


Fig. 39. The steep landscape above the village of Altit, with the fort cliff standing above the Hunza river and the KKH.

ceive themselves as the warrior group, while Wakhi and Shina speakers are regarded as nourishers of the society who provide the dearly-needed basic food items for Central Hunza and the ruling elite.

This attribution was reflected in the tax system at the beginning of the twentieth century when the two sections of Gojal were made to pay in kind four fifths of all grain and livestock taxes in Hunza, while only one fifth of the population lived there.¹¹ On average, the inhabitants of Gojal were taxed ten times higher than those in Central Hunza. The taxes levied in Gojal and Shinaki significantly surpassed the amount the *tham* gained from his own lands, cultivated under forced labour schemes (*rajaki*), and from his herds in pasture grounds. The example shows the degree of differentiation prevalent in the societal layers of the Hunza community. Overall, the social position of Burusho was esteemed higher than that of Wakhi and Shina speakers, let alone Dom artisans. But in contrast to the general pattern we find high positions in all ethno-linguistic groups. The advisor to the ruler and chief executive of certain tasks (*wazir*), as well as other functionaries (*uyónko*), belong to the Burusho but in the same group Burusho load-carriers and gold-washers can also be found. A sophisticated system of weaving a fabric of loyal supporters of a comparatively weak ruler characterised the society prior to colonial interference. Loyalty was created across social boundaries through foster relationships (*uúsam*) between the ruling elite and ordinary farming households of all groups.

After the British takeover in Gilgit and Hunza, the colonial administration took an instrumental role in appointing and backing hereditary and/or invested rulers. Political agents in Gilgit observed the developments in the respective valleys and interfered in local politics to such an extent that they allocated subsidies and posts to loyal supporters. Thus they created and fostered a ruling elite, backed by their military supremacy and administrative skills. Mir M. Nazim Khan (1892-1938) of Hunza was such an appointee, who utilised British backing for extracting huge amounts of taxes for the upkeep of his court, for the implementation of major irrigation schemes and infrastructure assets, as well as for enabling Hunza people to cultivate barren lands outside Hunza, for example in the vicinity of Gilgit.

The ruler's power was not limited to levying dues and extracting forced labour from the people; he was also the patron who initiated the agricultural year by ploughing the first furrow and releasing irrigation water to fertile soils. During the growing cycle, he was consulted as the only local authority when rainfall was scarce, or springs and glaciers did not release sufficient water. He was attributed with the power of rain-making. At harvest time, he led the rituals connected to the festive calendar. The winter season saw the *tham* and his entourage engaged in hunting in Gojal, feasting upon the plentiful food and meat resources of the local farming households who provided huge quantities of firewood, while the Shinaki delivered wines (*mel*) and spirits (*arak*). In many respects, the local elite composed of the *tham*, *wazir* and other office-bearers (*uyónko*) represented a societal microcosm in which different instances of jurisdiction were possible and the *tham* was the final decision maker in his court, regularly held in Baltit fort. Telephone connections to all villages in Hunza were established early in the twentieth century and enabled the *tham* to keep close control and surveillance on all movements and developments within his principality. In consequence the settlement structure of the Hunza valley is strongly connected to control mechanisms and social structure, as well as to the imaginative and innovative visions of rulers and farmers.

SETTLEMENT HISTORY

The Hunza valley, comprising the two formerly independent principalities of Hunza and Nager, has experienced a different pattern of population dynamics than other valleys. Basically the number of inhabitants doubled during the fifty years between 1931 and 1981 and has further increased since. The impact of this population growth has found its spatial expression in the expansion of settlements within the valley and the establishment of extra-territorial migrant colonies outside the former principalities. The settlement process in Hunza has been reconstructed for the last two hundred years.¹² For reasons of structural change this epochal growth cycle might be divided into four different phases:

Period of nuclear villages (pre-1800)

Of all villages in Central Hunza existing today, the oldest seem to be the three original *khan* (fortified villages) of Ganish, Altit and Baltit, as well as the artisans' settlement of Dumyal or Berishal. The Dom have served as musicians and blacksmiths to the Burusho farming communities of the three 'original' villages in the main irrigation oasis of Central Hunza.¹³ Until today the remnants of the old nuclei suggested a close relationship between site selection and defence purposes while safeguarding access to water supply and agricultural lands at the same time. Hindi constituted the only *khan* in the lower region of Shinaki where Shina speakers have been living. The upper part of the Hunza valley was dominated by Kirghiz nomads, who seasonally utilised the high pastures there. The system of fortified villages and their structural elements were quite common all over the Hindukush-Karakoram region, giving protection in times of threat from outside intruders.

Pre-colonial phase of oases expansion and internal colonisation (1800-1891)

The first quarter of the nineteenth century experienced the establishment of a number of filial settlements in Central Hunza linked to population growth and the innovative expansion of the irrigation network under Tham Silum Khan III. At the same time this ruler extended the sphere of Hunza dominance northwards, expelled Kirghiz nomads from Gojal and allowed immigrating Wakhi settlers to found villages within the Burusho *cordon sanitaire*. The northern passes were controlled from the *khan* of Misgar and Khudabad, while in the south Maiun formed an important defence line towards Gilgit. All new



Fig. 40. The terraced slopes between Baltit fort and Altit fort (in the background) irrigated by water channels running down from the nearby glaciers.

villages of this period were designed as compact settlements with fortifications in the traditional *khan* style. Along the routes a system of obstacles and barriers (*darband*) had been introduced to control the movements of inhabitants and travellers between the settlement areas of different sections (*maqsòd*) of Hunza. The number of villages increased from five to twenty-five during this period of internal colonisation.

Settlement concentration processes under colonial supremacy (1892-1947)

Hunza neither resembled a remote microcosm nor the main arena of the so-called 'Great Game' when Russia and Great Britain tried to expand their spheres of influence into the Karakoram valleys.¹⁴ Initially the Hunza *tham* tried to take advantage of both contenders. In the end Hunza lost its independence and became a part of British India, retaining certain degrees of autonomy. The shape of Hunza changed when international boundaries were demarcated as a result of the 'Great Game'. Boundaries between British India and China were negotiated and defined, territory claimed by the *tham* became unavailable and was lost until today.

The short but effective 'Hunza Campaign'¹⁵ of 1891 had a lasting influence on the settlement patterns. The structural element of *khan* disappeared and a process of populating unfortified hamlets (*girám*) within the village lands started, thus reducing the distance between habitations and fields. In connection with the construction of new irrigation channels the colonisation process of barren lands was extended into the peripheral regions of Shinaki and Gojal. A number of new villages was founded especially during the forty-six-year-long reign of Mir M. Nazim Khan (1892-1938). He and his *wazirs* were the prominent figures during the second phase of internal colonisation. The expansion led to a compact network of contiguous major oases in Central Hunza and to the improvement of cultivable tracts according to available technology. From the beginning of the twentieth century a dialogue, sometimes a dispute, developed between the *mir* of Hunza and the British colonial administration in Gilgit about the carrying capacity of the Karakoram valleys. The *mir* demanded barren land within the Gilgit agency for cultivation and the establishment of irrigation oases. Both actors could profit from such schemes and consequently different resettlement projects for Hunza farmers resulted: in 1908 the first lands were allocated in Matum Das (Rahimabad); the

second scheme followed in 1912; the channel project of Oshikandas provided Hunza farmers with 312 acres of land and the Bagroti landowners with 1188 acres in 1938-1939; from 1940 onwards different irrigation schemes in Danyor attracted more migrants. Besides the founding of those irrigation colonies individual farmers acquired agricultural lands in the vicinity of Gilgit town.¹⁶ This emigration process has continued until today although nowadays the pull of Gilgit as a workplace for non-agrarian occupations supersedes the attraction of improvement projects.

Village growth and response to improved communication systems (from 1947 to the present)

Since the independence of Pakistan and the improvement of communication lines towards the Indus basin, the dominant factors alleviating population growth in the Hunza valley have been the expansion of existing villages, emigration to Gilgit and extra-montane migration down country. Basically the process of founding new independent villages has been stopped; exceptions occurred during the rule of the last *mir* of Hunza, Jamal Khan (1945-1974): Sarteez (1950), Imamabad and Jamalabad (1960) in Gojal. All villages have experienced an increase in households and a concentration process of settlements. The extension of jeep roads to Hunza and Nager since 1957 and the opening of the Karakoram Highway (KKH) in 1978 supported a reorientation of site selection for commercial and administrative buildings in the villages towards access roads where small bazaars have been developed. Valuable agricultural lands were converted to commercial sites for the construction of physical infrastructures. New building materials brought in from distant bazaars allowed for cheaper construction of housing.¹⁷ As a general observation settlement concentration is governed by the network of communication lines for motorised transport.



Fig. 41. New settlement patterns, service activities and types of construction prompted by improved road accessibility: the modern section of the historic village of Ganish, on the new KKH during apricot blossom season (see also pl. 20).

Improved accessibility has not only supported the transport of goods but also enhanced the mobility of people. Rural-urban migration towards Gilgit town has led to the resettlement of a substantial number of households there. In contrast to extra-montane migrants, who temporarily leave their rural villages in search for wage-labour in the industrialised south, settlers in Gilgit have separated themselves from their inherited land property and have become permanent citizens of Gilgit town. Nevertheless, economic links within the community are strong and have led to an extension of commercial undertakings from Gilgit into the Hunza valley in recent years. The KKH supports commuting between village and town. Thus an actual evaluation of the settlement process in the Hunza valley has to be discussed in line with the overall population growth in the Northern Areas and in Pakistan.

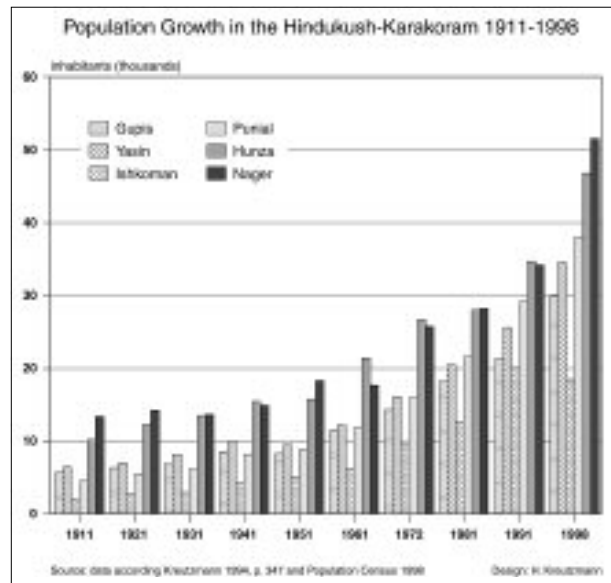


Fig. 42. Population growth in northern Pakistan.

POPULATION GROWTH IN THE HINDUKUSH-KARAKORAM

Comparing the population growth of the high mountain belt of Pakistan with the rest of the country, calculations prove that both sub-regions have registered overall population increases during the twentieth century and that the average annual growth rate is higher in the lowlands than in the mountain regions. Analysing the data on a regional level in a historical perspective and calculating area population densities and growth rates, a differentiated demographic pattern emerges. The first half of the twentieth century registered moderate growth rates of population in the mountain belt (0.67% per year) while since 1951 significantly higher annual rates (2.30%) have been recorded. In the early phase developments in the Hunza subdivision reflected a higher growth rate (1.11%) than average but a lower one (1.93%) since 1951. Regional differentiation presents low rates in the western (Chitral) and eastern (Baltistan) wings while the centre (Gilgit and Ghizer) grows much faster. The latest census data from 1998 support the hypothesis that substantial growth rates are recorded in the valleys of northern Pakistan, while at the same time out-migration continues to be a significant behavioural pattern to increase household incomes and to diversify income resources at a higher level of expertise. The construction of the KKH and improved accessibility have played a dominant role in changing livelihoods.

THE KARAKORAM HIGHWAY AND ITS SOCIO-ECONOMIC IMPACT

The first link for 'modern' traffic between northern Pakistan and down-country Pakistan was established from the railhead in Havelian (North-West Frontier Province) via the Kaghan valley in 1949. The selected route followed a colonial mule track supporting the British administration and garrisons in the Gilgit agency.¹⁸ It was only after independence that the first jeep reached Gilgit – a cul-de-sac of its own – before the track was extended towards Hunza in 1957. The jeep-worthy road across Babusar pass (4173 m) remained open for three months in the summer only; during the rest of the year air links transported valuable supplies at high cost.¹⁹



Fig. 43. The recent construction of the Aliabad irrigation channel which links the Hassanabad glacier with the fertile oasis of Central Hunza. The same rock-blowing and retaining wall construction techniques are used for building road tracks.

After the inception of Pakistan's first Village Aid Five-Year Plan in 1956, development efforts based on public funds reached the mountains and were made available in the Gilgit agency. A participatory approach facilitated the construction of suspension bridges to span the Hunza river near Danyor and the Gilgit river at Sher Qila. Villagers provided three quarters of the cost, all the unskilled labour and cut all the wood for bridge construction from communal forests.²⁰ At this early stage of development, the Central Government covered seventy-five per cent of all non-recurring expenditure and fifty per cent of recurring expenditure,²¹ trying a holistic approach by introducing new wheat varieties, new ploughs, different fruit varieties, improved livestock (pedigree bulls, merino rams and so on), silkworm production and new weaving looms for local tweeds. Out of the annual Village Aid Programme's budget of Rs. 300,000 (approximately US \$ 65,000 at that time), two thirds were spent on transport alone. A lack of accessibility meant high costs for the allocation of goods from the lowlands to the places of need in the mountains. Consequently, the remaining budget for development projects was substantially reduced. Not surprisingly, the transport charges for one *maund* (one *maund* equals 37.32 kg) of goods from Rawalpindi to Gilgit amounted to the multiple of its value.

In order to reduce transportation costs of basic goods an Indus valley road from Swat was proposed and in 1959 construction began. As a result of the Pak-China Border Treaty of 1963 bilateral, cooperative efforts led to what has been termed the Pak-China Friendship or Karakoram Highway (KKH). By 1975 the KKH was accessible to trucks and since 1978 regular traffic has plied between Rawalpindi and Gilgit. In addition to trans-montane exchange of goods, the Highway brings subsidised foodgrains from down-country Pakistan into the region. It is the lifeline for the ever-growing food deficit of northern Pakistan. Cereals, fresh meat (imported as live animals for slaughter in the bazaars) and cooking oil account for more than three quarters of all imports from the lowlands. The per capita dependence on supplies through this artery is highest for Gilgit district and significantly lower in Chitral and Baltistan. Chitral is seasonally cut off from external supplies until the tunnel under the Lowari pass might be completed. Baltistan has been linked to the Karakoram Highway through an asphalted road which now enables year-long traffic communication and a rapid change of market prices for basic commodities. The Baltistan road did not exist as such in previous times when Baltistan was oriented towards Srinagar. In 1963, a first road link to Gilgit was established across the Deosai plateau, two years later through the Indus valley. The road was extended and asphalted in the mid-1980s. In addition to its ubiquitous military importance, huge quantities of food are brought into the region to supply army personnel, tourists and growing numbers of local farming and trading households.

Prior to discussing the economic gains and losses from the KKH, some of the ensuing socio-cultural changes need to be mentioned. We have to acknowledge the fact that the KKH did not just open up a new world of communication and exchange, but that this artery amplified existing exchange relations which had a major impact on local societies and behavioural patterns as well. The availability of an improved traffic infrastructure coincided with imposed social change. Between 1972 and 1974 Pakistan's prime minister Zulfikar Ali Bhutto abolished the autonomy of local rulers. Mir Jamal Khan was the last Hunza *tham* who survived his demise only for another two years. The close watch and control executed by the hereditary ruler lost its strength, more opportunities and personal liberties for local enterprising people emerged.

With the apparent power vacuum, new administrative structures came into effect. Local bodies and integrated rural development projects replaced the infrastructural functions of previous rulers; village organisations and community self-help groups emerged. The KKH enabled more people to out-migrate from the remote mountain valleys in search of jobs and education. Both endeavours became successful and changed the social structure significantly. Education and economic entrepreneurship mixed up the previous social layers originating from the traditional elite structure. Former influential groups lost their traditional dominance, since control over mobility and migration could no longer be executed. The new elite was grouped around economic success, which is strongly linked to trade, tourism and professionalism. Consequently, today we are confronted with a hybrid system of old and new, of tradition and modernity, of inherited and acquired respect. The developments connected to the opening of the KKH have left their mark on all societies in the Northern Areas of Pakistan and posed a challenge to planning regional development by state authorities and government institutions. Incorporation of the formerly remote mountain valleys into the mainstream of Pakistan's economy and society has been their task ever since.

As early as 1972, M. Abdullah's Government Report advocated a regular supply of basic food items to northern Pakistan from the grain chambers of lowland Punjab. The proposed concept favoured an exchange of a different range of cash crops from the mountain valleys with surplus staple foods from the plains, with transport subsidised from public funds. In Abdullah's opinion self-sufficiency in grain production could not be achieved in the mountain valleys. For example, the highly subsidised and competitive price for wheat flour (*ata*) could not be met by local producers. Consequently, the proportion of food produced locally is steadily decreasing. In some villages of the Hunza valley local production of *ata* nowadays is less than one third of the household's annual consumption. Similar trends are observed in other regions of the Northern Areas. The dependency on down-country supplies for other consumer goods is even higher. For the first time in history there are no periods of starvation and famine now for such disasters have been prevented by subsidies and crisis management from the Federal Government and the World Food Programme.

Robert Chambers's observation that research and development projects follow networks of roads²² has been supported by the extension of major development projects to this region in the aftermath of the KKH construction. The Government of Pakistan and non-governmental organisations with international funding have established a number of rural development and community service projects with substantial impact on the physical infrastructure, local trading, education and health services. Their efforts have also focussed on the extension and improvement of existing agricultural resources. By applying economics of different scales of production they aim to increase productivity through the cultivation of valuable niche



Fig. 44. The rapidly developing Karimabad bazaar with shops and small hotels – a focal point for tourists.

products, such as seed potatoes, vegetable seeds and special varieties of fruit. The exchange of goods between lowlands and highlands is the driving force behind this concept.

In periods of crisis, these development models based on long-distance trading relations for cereals and other staples are vulnerable. This potential scenario must be kept in mind. Road closure due to natural or man-made hazards could provoke dire results. In the case of the Karakoram Highway, engineer corps maintain the road and most natural hazards – especially in spring and during the monsoon season – are managed in such a way that the affected stretches can be

reopened after a short while, although repair costs are high for providing this year-long service. Providing such a high standard for transportation is a singular achievement in such difficult terrain. Less control can be exercised over highway robbers and/or politically motivated activists who threaten the safety of travel along this single lifeline, exploiting its single status to execute pressure. These unstable conditions also affect other spheres of global and inter-regional exchange, such as tourism and trade.

The initial construction of the KKH as an artery between the lowlands and the Karakoram led to a secondary road network of link roads. In the Hunza valley more than ninety-five per cent of all households are connected with a jeep-worthy or truck-worthy road by now. In the side valleys, such as the Gilgit, Ishkoman, Yasin and Astor, and Baltistan, the same density is aimed at. New suspension bridges were constructed with bilateral aid. The majority of link roads has been financed by public funds and regional development plans; some have come into existence as a productive physical infrastructure programme of the AKRSP. Especially in remote areas with only a few scattered settlements, this development agency has taken the role of a planning institution for accessibility and market connections. Road construction has become the second most important activity of this rural development programme only to be surpassed by the construction of irrigation channels. The emphasis on the construction of tertiary roads by private sector development organisations such as the AKRSP has continued up to today, while the government maintains the KKH and the Skardu highway, and constructs secondary roads.²³ The major arteries in the urban and semi-urban centres of Gilgit, Karimabad, Skardu and Chitral belong to that category. The change in government and recent changes in world politics have convinced the President of Pakistan, Pervez Musharraf, to implement major projects in road construction: asphalt roads connecting Ghizer and Chitral districts via Shandur pass (3700 m) and the route across Babusar pass (4100 m) linking the KKH at Chilas with Kaghan and Hazara. The improvement of accessibility was a major driving force for the establishment of tourism in the Northern Areas of Pakistan as a local source of income generation.

TOURISM IN NORTHERN PAKISTAN – OPPORTUNITIES AND CONSTRAINTS

Sustainable development in general and sustainable tourism in particular are concepts for future generations who should be enabled to make an adequate living in a specific setting. In the Northern Areas of Paki-

stan we are confronted with a mountainous environment of a unique and extraordinary quality. In the age of globalisation, however, it is a fact that even the remotest region on earth does not remain unaffected by movements of the world markets. Obviously, international tourism is the best proof of this thesis as people leave their home country and continent in order to visit remote mountain regions in search of something different. In the Northern Areas, the incentives to enjoy views of magnificent peaks, go trekking and be exposed to an exotic mountain culture are overwhelming.

What are the chances of sustainable tourism in northern Pakistan? The potential advantages of tourism have been abundantly highlighted and include job provision in off-farm employment, additional incomes from the service sector, reduction of out-migration, increase of the overall income of a location and/or region, catalyst effects in favour of secondary and tertiary beneficiaries from the tourism industry and diversification of economic activities. In general, tourism can act as an agent of change and, to some extent, as an incentive for protecting cultural heritage and natural landscapes if properly controlled. On first sight there seem to be only advantages.

Better scrutiny, however, tells us that there are three phases with different risks and benefits. During the initial phase, tourism development indeed generates additional revenues and off-farm income opportunities which are rarely matched by cash crops or other niche productions. Overall, this is the most profitable phase. In a second step major investments are undertaken: physical infrastructures such as hotels, restaurants and souvenir shops are built and opened. Great expectations are connected with these innovative and challenging actions. All investments are based on household and lineage savings and/or loans from banks and national, regional or community-based finance corporations. In a third phase, saturation point is reached.



Fig. 45. On top of the Khunjerab pass (4550 m) linking Pakistan with China.



Fig. 46. A member of the old gold-washer community searching for the fine gold dust found in alluvial deposits.

Increasing numbers of entrepreneurs try to participate in the market, the supply outgrows the demand and benefits from the huge investments dwindle. Previously unexpected environmental and social follow-up costs enter the accounts. If during this phase a major crisis occurs, disaster threatens a broad layer of society, which loses out on income and investments.

The scenario described here is derived from the recent Hunza experience. The early entrepreneurs fared best and remained ahead of their competitors if they invested modestly. Tourism became a valuable sector of economic activities in which representatives from all layers of society participated and invested.

At one point, both the son of the last *mir* and the high-school peon became hotel owners. Everybody who could afford to invest a substantial sum of money tried to get a share in the tourism business. Nevertheless, the social structure of tourism reflects more than any other economic activity the traditional social structure of Hunza. The biggest hotels of Karimabad belong to the sons of the last *mir* and *wazir*. The traditional elite, either from the ruling families (*gushpur*) or from the *wazirkuts*, is significantly over-represented in the group of government employees and private tourism entrepreneurs, hotel owners and guides. They successfully manage to take advantage of their early contacts with foreign visitors, their language and hospitality skills, as well as their social ranking. No other group of people has been so well organised in maintaining strong loyalty and keeping a personal share in the tourism business by excluding others. On the other hand, all investors have taken a great risk in such a vulnerable enterprise, paid substantially high prices and faced losses.

When the hotel boom took off in Hunza, the demand had already slowed down and competition with other global destinations was growing. While visitor numbers stagnated and the average duration of stay shrank, the investment in new constructions continued on borrowed money. Different crises – either home-made in Pakistan or outside the country with effect on the country – have occurred since the mid-1990s, with intervals becoming shorter. But nothing had an effect like that of 9/11 (9 September 2003) when from one day to the next the best tourism season in seven years dramatically collapsed. Even an increase in domestic tourism does not compensate for this loss as profit margins become smaller. Tourism operators had to close offices, tourist guides were laid off, demand for services and local products became almost non-existent, loans were defaulted and bankruptcy of tourism entrepreneurs was lying in wait. People who had earned a substantial income from tourism, went back to their roots and practiced mountain agriculture again, the only insurance they possess unless drawing a pension from a previous engagement in government jobs.

How did the federal administration cope with these developments? The reduction of peak royalties by fifty per cent through the government has not attracted more international expeditions so far. The experience of 9/11 has dramatically shown how vulnerable the tourism sector in northern Pakistan is and how little prognostic value can be attributed to the promises of sustainable tourism. At present, a slight recovery can be

observed. The celebration of the fiftieth anniversary of the first ascent of K2 by Ardito Desio initiated further modest growth. To sustain a renaissance of tourism as a major source of income favourable and peaceful conditions are required.

From this discussion it follows that tourism might remain a major source of income for the Northern Areas in the future. Yet it should be one and not the only source of revenue to be promoted in this specific setting. Over-reliance on this source is not advisable, as too many parameters are beyond the control of local entrepreneurs. In this regard sustainability means developing safe sectors such as mountaineering, trekking and individual tourism for different segments, with a particular emphasis on ecological and cultural interests.

¹ For a detailed discussion of the ecological potential of the Northern Areas please refer to Hermann Kreutzmann (ed.), *Sharing Water. Irrigation and Water Management in the Hindukush - Karakoram - Himalaya*, Oxford University Press, Karachi-Oxford 2000.

² Detailed information on the Shigar valley is based on the data presented in the dissertation of Matthias Schmidt, *Boden-und Wasserrecht in Shigar, Baltistan. Autochthone Institutionen der Ressourcennutzung im zentralen Karakorum*, Bonn 2004; and his article "Interdependencies and Reciprocity of Private and Common Property Resources in the Central Karakorum", in *Erdkunde* 58 (4) 2004.

³ The utilisation of pastures, varying livelihood strategies and its importance has been covered in Eckart Ehlers and Hermann Kreutzmann (eds.), *High Mountain Pastoralism in Northern Pakistan*, Franz Steiner-Verlag, Stuttgart 2000.

⁴ The results of disaster-related research in the North-Western Karakoram have been published by Edward Derbyshire, Monique Fort and Lewis Owen, "Geomorphological Hazards Along the Karakoram Highway: Khunjerab Pass to the Gilgit River, Northernmost Pakistan", in: *Erdkunde* 55 (1), pp. 49-71, 2001; Hermann Kreutzmann, "Habitat Conditions and Settlement Processes in the Hindukush-Karakoram", in *Petermanns Geographische Mitteilungen* 138 (6), pp. 337-356, 1994, from which the data presented here are derived.

⁵ The findings of the linguistic survey have been published in Hermann Kreutzmann, "Sprachenvielfalt und regionale Differenzierung von Glaubensgemeinschaften im Hindukush-Karakorum. Die Rolle von Minderheiten im Konfliktfeld Nordpakistan", in *Erdkunde* 49 (1), pp. 106-121, 1995.

⁶ The quote is taken from Karl Jettmar, "Bolor - a Contribution to the Political and Ethnic Geography of North Pakistan", in *Zentralasiatische Studien* 11, p. 429, 1977. See also Karl Jettmar, "Northern Areas - an Ethnographic Sketch", in Ahmad Hasan Dani, *History of Northern Areas of Pakistan*. Historical Studies (Pakistan) Series: 5, Islamabad 1989, pp. 59-88.

⁷ Data provided by the Government of Pakistan, "1998 District Census Report of Gilgit", Islamabad 2000, p. 26.

⁸ For detailed maps and survey data see Hermann Kreutzmann 1995.

⁹ John Staley introduced these two clusters from his observations and earlier literature; see John Staley, "Economy and Society in the High Mountains of Northern Pakistan", in *Modern Asian Studies* 1969, 3, pp. 225-243. For further references and recent studies see Zahid Javed Janjua, "Tradition and Change in the Darel and Tangir Valleys", in I. Stellrecht (ed.), *Karakorum-Hindukush-Himalaya: Dynamics of Change*, Cologne 1998, pp. 415-427.

¹⁰ In her dissertation Elizabeth Staley observed distinguishing features between these two societal settings. The cultural landscape of the republics was devoid of any orchards, a trait which has been related to the land rotation system of *wesh*. Agricultural tasks are predominantly executed by indebted wage-labourers from outside, who are tolerated as employees. Intensity of crop farming has been low and cultivable land abundant. In comparison with the principalities, the agricultural resources of the republics are abundant and under-utilised. There landowners work their smallholdings (on average less than one hectare per household) themselves and are engaged in intensive exploitation of available resources. The upper limits of certain crops are significantly higher in the principalities than in the republics. Natural forests have been depleted to a high degree. Scarce water resources are optimised in a highly sophisticated system of water management by ascribing qualified priorities to different crops, orchards and meadows; see E. Staley, *Arid Mountain Agriculture in Northern West Pakistan*, Lahore 1966.

¹¹ For further elaborations on the social structures in Hunza detailed information is provided in Hermann Kreutzmann, *Hunza - Ländliche Entwicklung im Karakorum*, Dietrich Reimer Verlag, Berlin 1989, pp. 166-179, and Hermann Kreutzmann, *Ethnizität im Entwicklungsprozeß. Die Wakhi in Hochasien*, Dietrich Reimer Verlag, Berlin 1996, pp. 282-289.

¹² The sources of information include oral traditions about the extension of irrigation networks and the establishment of filial settlements, colonial reports and records, as well as travelogues (for details see Hermann Kreutzmann 1989, pp. 48-59). The systematic recording of genealogical affiliations of founders of new settlements and village histories have supported the reconstruction of the expansion process.

¹³ In 1981 Dumyal was renamed Mominabad (see Anna

Schmid, "Minority Strategies to Water Access: The Dom in Hunza, Northern Areas of Pakistan", in H. Kreutzmann (ed.) *Sharing Water. Irrigation and Water Management in the Hindu Kush - Karakoram - Himalay*, Karachi-Oxford 2000, pp. 116-131), in 1983 Baltit became Karimabad and Hindi was renamed Nasirabad.

¹⁴ For an evaluation of the historical developments and its effects on Hunza's exchange relations see Hermann Kreutzmann, "The Karakoram Highway. The Impact of Road Construction on Mountain Societies", in *Modern Asian Studies* 1991, 25 (4), pp. 711-736; Hermann Kreutzmann, "Challenge and Response in the Karakoram. Socio-Economic Transformation in Hunza, Northern Areas, Pakistan", in *Mountain Research and Development* 1993, 13 (1), pp. 19-39; and Hermann Kreutzmann, "The Chitral Triangle: Rise and Decline of Trans-Montane Central Asian Trade, 1895-1935", in *Asien-Afrika-Lateinamerika* 1998, 26 (3), pp. 289-327.

¹⁵ Contemporary accounts of the Hunza Campaign have been given by E. F. Knight, *Where Three Empires Meet*, London 1895 (reprint: Lahore 1986); Nazim Khan, *The Autobiography of Sir Mohamed Nazim Khan, K.C.I.E. Mir of Hunza*, Karimabad 1936, (mimeographed).

¹⁶ IOL/P&S/12/3288: "Administration Report for the Gilgit Agency for the Years 1938, 1939"; Kreutzmann (1989, p. 183). The irrigation scheme of Harathingdas (nowadays Jalalabad) by farmers from Teisot and Bilchar was completed in June 1939

(IOL/P&S/12/3285: Gilgit Agency Diary June 1939). The villages with migrants from Hunza and Nager include: Nomal, Naltar, Gujur Das (Sultanabad), Jutal, Gwachi and Diding Das (Muhammadabad). At the junction of the Ishkoman and Gilgit river Hunza settlers have cultivated the colony of Golo-das; in Ishkoman some settled in Bar Jangal.

¹⁷ The costs for a selection of building materials such as cement, corrugated iron sheets and wooden beams from the Indus valley have undercut purchasing and construction costs with locally available and treated products such as dressed stone and timber from fruit trees.

¹⁸ Before 1935 the Gilgit agency was supplied with goods via Burzil pass (4200 m) from Srinagar. After the lease of Gilgit to British India the Babusar route was expanded and improved by military engineers and contractors for the summer caravans. Both routes were closed in winter due to heavy snowfall.

¹⁹ Air traffic between the Punjab and Gilgit was introduced as early as 1927.

²⁰ L. P. Clark, "Progress in the Gilgit Agency", in *Eastern World* 1960, 14, p. 22.

²¹ Clark 1960 cit., p. 21.

²² Robert Chambers, *Rural Development. Putting the Last First*, London, Lagos, New York 1983, p. 13.

²³ World Bank, *The Next Ascent. An Evaluation of the Aga Khan Rural Support Program, Pakistan*, Washington 2002, p. 29.