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Accessibility for High Asia: Comparative Perspectives on Northern Pakistan's Traffic Infrastructure and Linkages with Its Neighbours in the Hindukush-Karakoram-Himalaya

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Abstract: Starting with a discussion of development concepts which were applied in practice and which followed the developmentalist paradigm the expansion of traffic infrastructure in colonial and post-colonial periods is presented for the High Asian mountain rim. Selective railways and roads are the major feature of this development, which aimed first on serving the convenience of hill station visitors and followed strategic considerations later on. This bias between regional planning and implementation remains a characteristic feature. At the same time traffic infrastructure without asphalt roads is important for the mountain areas, thus breaking up the strong correlation between development and asphalt roads.

Keywords: Karakoram; Himalaya; Pakistan; Karakoram Highway; accessibility; trade networks; road systems; development

Introduction

The birth of Pakistan in particular and the independence and creation of some other Asian nation states in general coincide with an international effort to overcome colonialization and to strengthen mutual exchanges of goods and knowledge. The age of planned development commenced with the unanimously recommended strategy of modernization. The concept of modernity was virtually synonymous with economic growth. To sustain and accelerate economic growth, an adequate physical infrastructure was viewed as an essential requirement. Surprisingly or not, in this respect there existed very little differences between the two predominant ideological role models of the 20th century: Eastern communism and Western capitalism. Mobility and urbanization were identified as the keys to modernization, and viewed as agents for the elimination of economically inefficient traditions. An overall increase of exchange and mobility following improvement in accessibility was envisaged as a tool to solve the problem of underdevelopment. The vision of unlimited growth was finally challenged by the perception of limits to economic growth imposed by finite quantities of environmental resources. The development paradigm shifted from the focus on maximisation of economic growth to sustainable economic growth as suggested in the Brundtland Report of 1987. The improvement of traffic infrastructure is an essential part of

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modernization strategies: mobility, exchange of goods, nation-building through market integration and the reduction of rural-urban disparities are key elements for the implementation of regional development.

1 Methods of Data Collection

The following analysis of the role of transport networks needs to review the processes of improving accessibility to date as a starting point. A comprehensive survey of traffic infrastructure in the Hindukush-Karakoram-Himalaya region is lacking. The importance of strategic measures for the improvement of transport between the lowlands and highlands bordering the South Asian mountain arc, the selection and implementation of traffic technologies and the impact of border conflicts, geopolitical and economic interests need to be highlighted and compared with concepts of accessibility. The mountainous areas of Northern Pakistan were of prime interest to British colonialism in South Asia and during the Cold War. Consequently, this study is presenting an interpretation of changes in traffic infrastructure during the 19th and 20th century as well as material obtained from fieldwork in Northern Pakistan over the last two decades (Kreutzmann 1991, 1995, 1998, 2001, 2003). The Karakoram Highway is taken as a case in point for the exemplification of a major change in accessibility.

2 Traffic Tools of Empire: Railway Networks in the South Asian Mountain Rim Land

The first railway lines of South Asia were introduced less than three decades after the beginning of railway traffic in Europe. The East Indian Railway Co. was founded in March 1845, the first line became operative in 1853. Daniel Headrick highlights the importance of this "tool of empire": "The 1840s were a time of railroad fever in the Western world, and most of all in Britain. ... Building the railroad system of India became the most monumental project of the colonial era; it involved the largest international capital flow of the nineteenth century, and produced the fourth longest rail network on earth ..." (Headrick 1981) Russian Colonization and introduction of physical infrastructure in Central Asia followed an approach similar to that of British railway networks in India(1). Railways connected commercial and population centers around seaports and industrial cities. In both empires railheads ended at the foothills leaving in between a mountain barrier of substantial extent.(2)

With a few exceptions the railway revolution effected less change in the Himalayan arc than in the European Alps. Railway lines such as Kalka to Shimla (opened in 1903), Hardwar to Dehra Dun (1900) and Siliguri to Darjeeling (1880-1886) are remarkable and rare cases in point.(3)They opened up the mountain barrier for the visitors of a growing number of hill stations and the Indian summer capital Shimla. Emphasis was put on the accessibility of hill stations, and the majority of these settlements could finally be reached from a railhead within the range of less than one hundred kilometres (Figure 1). For the exclusive and small group of imperial travellers these services were provided while other mountain areas remained untouched by them and their economic development was not significantly linked to railways.

Nevertheless, the vision of the imperial mountaineer Martin Conway did not materialize as he had predicted a substantial establishment of rail traffic for the Karakoram Mountains at the end of the 19th century: "... Gilgit must grow to be an important trade center, and possibly, ... a railway junction on the line from India to Kashgar, where

(1) The Russian railhead at Andijan in the Ferghana Valley was linked in 1899 with the earlier Transcaspian Railway. Thus the strategic Middle Asian Railway gained commercial importance and became the starting point for enterprising traders who aimed for Eastern Turkestan and the mountain areas of Central Asia

(2) Nevertheless, during the 1860s to1870s Russian and British generals and engineers discussed plans for a railway line linking Europe with India (Stadelbauer 1993: 72)

(3) The Kalka-Simla railway climbed from 640m asl up to 2150m, crossing 103 tunnels and covering a distance of less than 100 km (Kanwar 1990: 40; Kennedy 1996: 91). The Darjeeling Himalayan Railway (DHR) operated the 88 km of line from Siliguri to Darjeeling covering an altitude difference from 150 m asl to the highest point above 2200m. The construction on the DHR Extensionfrom Siliguri towards Kalimpong began in 1914-1915, but was never completed due to the occurrence of natural hazards. The final verdict not to continue rail construction towards the Himalayan range was given in 1950, cf. Bhandari 1984: 1~36.

the Samarkand branch will turn off!"（Conway 1894）Railway networks were extended in the lowlands and helped to reduce the cost of transportation for bulk goods everywhere. The one-sidedness of this technology is highlighted in the fact that between 1865 and 1941 about 700 locomotive engines were built in India while 12,000 of its kind were imported from Great Britain（Hurd 1982）.

The only country where major new railways leading towards the mountain arc have been planned and constructed in recent years is the People's Republic of China. In 1999 the Trans-Xinjiang railway towards Kashgar was completed and started operation. Presently China is constructing a new railway line from Golmud to Lhasa, opening is scheduled for 2007. Experiencing a changed esteem, the railway lines south of the Himalayan arc were not extended that much after 1931 and remained in a similar extent after independence of India and Pakistan (cf. Figure 1).

Other forms of communication and exchange relations need our attention. In contrast to the colonial incapability of bringing "modern" traffic into the mountains in a large scale and thus reducing the impact of the "mountain barrier" important trans-montane trade routes flourished and were responsible for substantial trade with valuable commodities (Figure 2). The salt trade between Tibet and Nepal, the Tibetan *pashmina* (Cashmere wool) trade via Kashmir, the sale of Badakhshani opium in the Ferghana oases and along the Southern Silk route and the Yarkandi *charas* (hashish) as a commodity destined for the plains of the Indian subcontinent are only few cases in point to be mentioned besides jade from Khotan, silk and carpets from various places of

Figure 1a Railway network in the North-west of the Subcontinent 1909

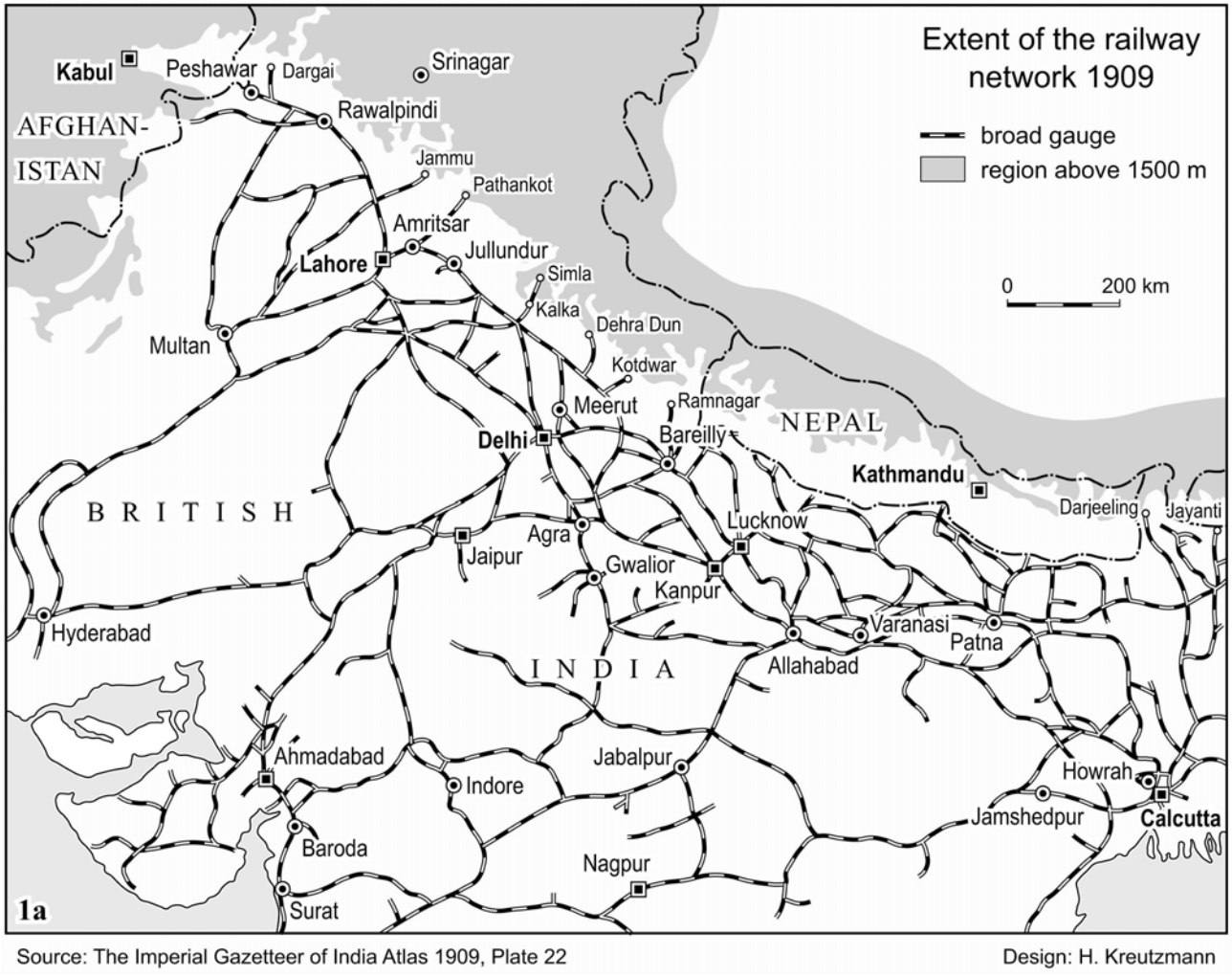
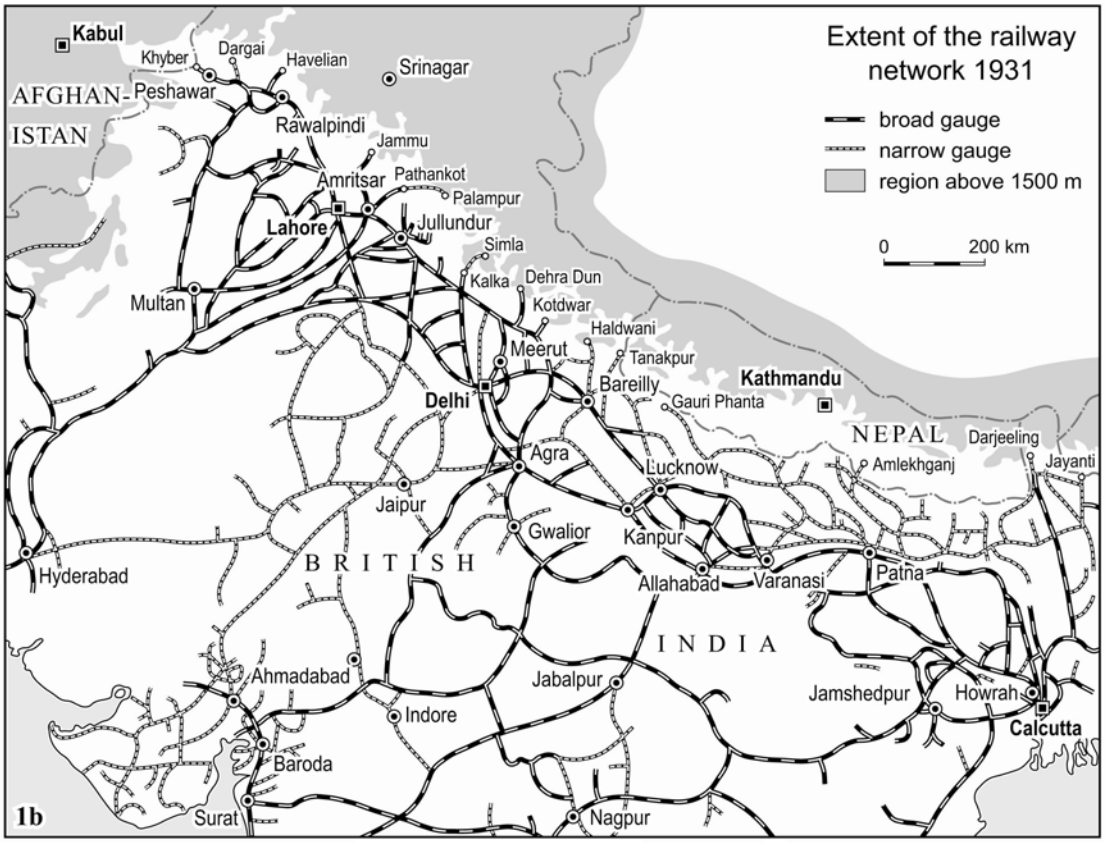
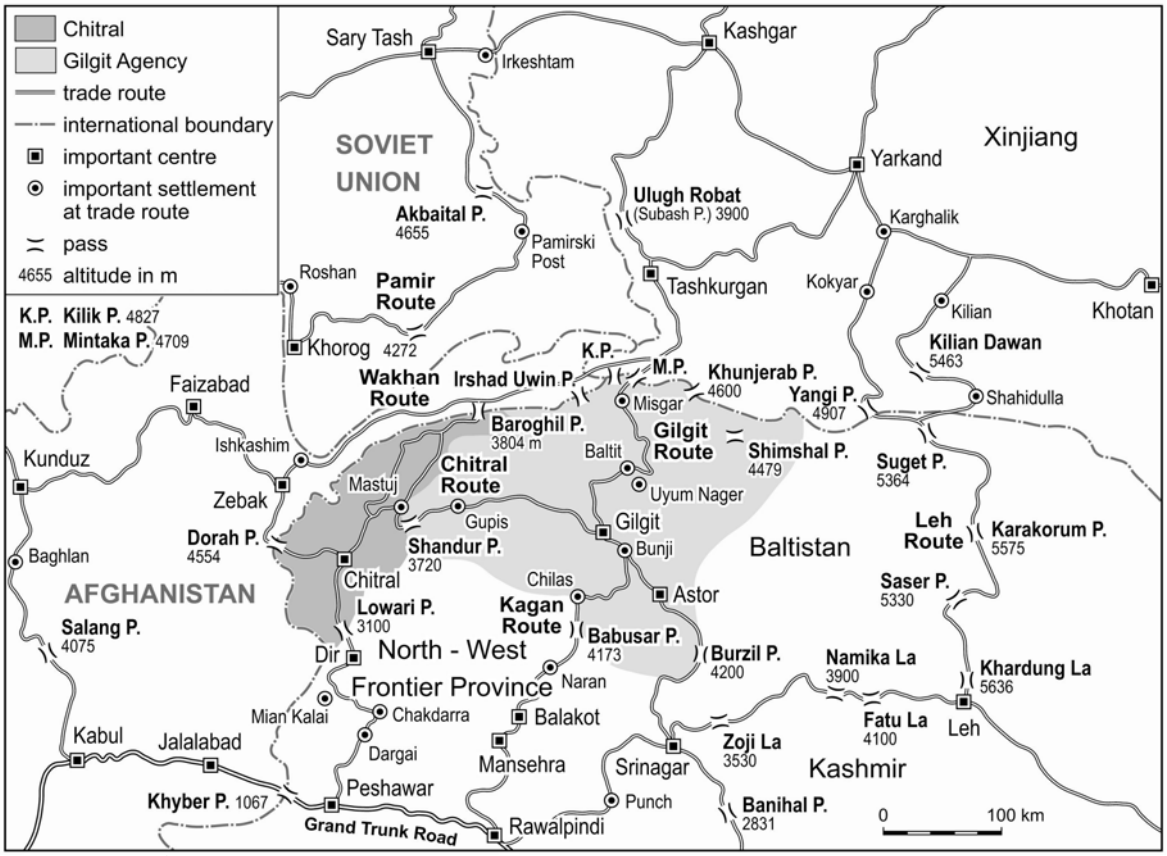


Figure 1b+1c Railway network in the North-west of the Subcontinent 1931 and 1961



Source: revised and extended from Schwartzberg ²1992, p. 126 Design: H. Kreutzmann

Figure 2 Important trade routes between Central Asia and British India in 1935



Source: revised from H. Kreutzmann 1991:720

origin and uncounted bales of material which changed the tailoring and dressing habits of all people living along the trade routes significantly.[1] The mountain communities who became involved in these businesses made ample use of their opportunities to generate off-farm income by providing transport and services to the traders. Consequently, substantial groups of mountain dwellers were able to change lifestyles and to broaden their base for livelihood by breeding transport animals or carrying loads themselves. The service sector connected with "traditional" mobility should not be under-rated as these "agents of change" left significant traces themselves.

3 Modernizing Accessibility after Independence: Road Networks

After independence, motorized transport was paid more attention than expanding railway networks. The advent of motor vehicles and the construction of roads in the mountain belt required a planning background different from that for railways. Roads for small four-wheel vehicles could be laid out following the traditional mule-tracks, which need some extensions or amendments and especially strong cantilever and suspension bridges. Some regions were connected to motor traffic already during colonial times. These enterprises were the adventurous ones such as the Citroen expedition of 1932 aiming to cross the Karakoram – devoid of any roads at that time - on its route from Beirut to Beijing. Prior to that the first motorcar was brought to Chitral in pieces and reassembled to ply in the main valley on specially constructed roads for the local ruler. Direct access to Chitral by crossing the Lowari pass (3100 m) was

(1) Kenneth Mason (1936) argues from a strategic point of view when he assesses the Himalayan arc as "barrier to modern communication". Consequently his view takes the impact of railways as the starting point for the discussion of developments in the modern traffic sector (roads and air routes) while neglecting the above-mentioned existing forms of less technology-driven forms of trade and exchange. More recent research has shown the impact of them, cf. Bishop 1990, Choudhury 1996, Fürer-Haimendorf 1975, Kreutzmann 1998a, b, 2001, Levi 2002, Stellrecht 1998, Stevens 1993.

only possible after 1947.[1] Two years later the first motor vehicle made its journey into Gilgit. (Kreuzman 1995a, 2001)

An earlier development of road networks (Table 1) could be observed in the Soviet Union where the Pamir Highway was completed in 1932 linking Osh in Kyrgyzstan with Khorog, the central place of Gorno-Badakhshan in Tajikistan via the 4655 m high Akbaital pass. These few examples of early linkages of mountain regions to existing road networks show the high degree of variety in making mountain regions accessible.

The strategic importance of the border regions in the mountain arc has to be judged as the driving force behind development of physical infrastructure. A monumental road was planned during World War II. British blueprints existed for the connection of Kashmir with Xinjiang in order to support the armed units of the Guomindang General Chiang Kai-shek. The primarily strategic enterprise aimed at military support against Japanese occupation forces in China and Mao Zedong's Red Army. In addition, Soviet influences in Xinjiang should be controlled, thus a giant project involving 70,000 labourers and army staff was to be executed. Coinciding with the end of the war this project did not materialize which was calculated on the basis of nine million man-days within a span of one year for the section of Gilgit to Kilik Pass alone.[2] After the lapse of half a century this was the first serious attempt to realize the prognosis of Captain Medley uttered in 1896: "The road [Punjab-Khagan-Chilas-Gilgit-Hunza-Kilik Pass -Yarkand] will in fact become the Grand Trunk road from Central Asia to India."[3] But the implementation needed further changes in the structure of regional politics. The major road link between the Grand Trunk Road of South Asia (Figure 3) and the Central Asian highways was only realized after Pakistan's independence and the Chinese Revolution. Connecting the GT road with the Southern Silk road its course was based on common strategic interests of friendly neighbours. The outstanding achievement to construct the trans-Karakoram axis grows in appreciation when considering the lack of appropriate road infrastructure in Pakistan as a whole.[4] Thus, the Karakoram Highway (KKH) has become not only a symbol of linking two major regions of subcontinental dimension and two historical road networks, but also an effective tool for growth-and exchange-related regional mountain development. In our context the KKH is taken as a case in point to discuss the overall results of strategic accessibility projects.

4 The Karakoram Highway - Symbol of Qualitative Change

The first link for "modern" traffic of Northern Pakistan with down country Pakistan was established from the railhead in Havelian (NWFP, cf. Figure 1) via the Kaghan Valley in 1949. The selected route followed a colonial mule track for the support of the British administration and the garrisons in the Gilgit Agency.[5] 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.[6] The road across Babusar Pass (4,173 m) remains open for three months in summer only and during the rest of the year air links were transporting valuable supplies at high cost.[7]

(1) Kreutzmann 1998a: 306. It took another five years for regular traffic to commence after widening the road between Dir and Chitral (Figure 2).

(2) IOL/P&S/12/4609: India Office Library & Records: Departmental Papers: Political & Secret Internal Files & Collections 1931-1947: Memorandum on the proposed motor road from North West India to Sinkiang via Gilgit, Chungking, 8.6.1944: pp. 6-15. N. N. 1951: 81.

(3) IOR/2/1064/45: India Office Records: Crown Representative's Records - Indian State Residencies: Kashmir Residency Files: Indo-Chinese Turkistan trade. Report by S. H. Godfrey, Political Agent Gilgit, to A. C. Talbot, Resident Kashmir, Gilgit 17.12.1896: quotation from Captain E. T. Medley, commanding the troops at Gilgit.

(4) Zaidi (1999: 384) assesses the current situation: "Compared to other underdeveloped countries, Pakistan's road density of 229 km per million persons is very low, and even countries with half Pakistan's GNP per capita, have a greater density. With 165,000 km of roads, Pakistan's density of 0.21 per sq. km is much lower than the 0.51 km suggested for underdeveloped countries. Moreover, only 18 per cent of paved roads are said to be in good condition, again, a very poor figure by any standard."

(5) 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 summerly caravans. Both routes were closed in winter due to heavy snowfall.

(6) The Times 22.6.1949. A photograph of that event is on display in the Gilgit Municipal Library.

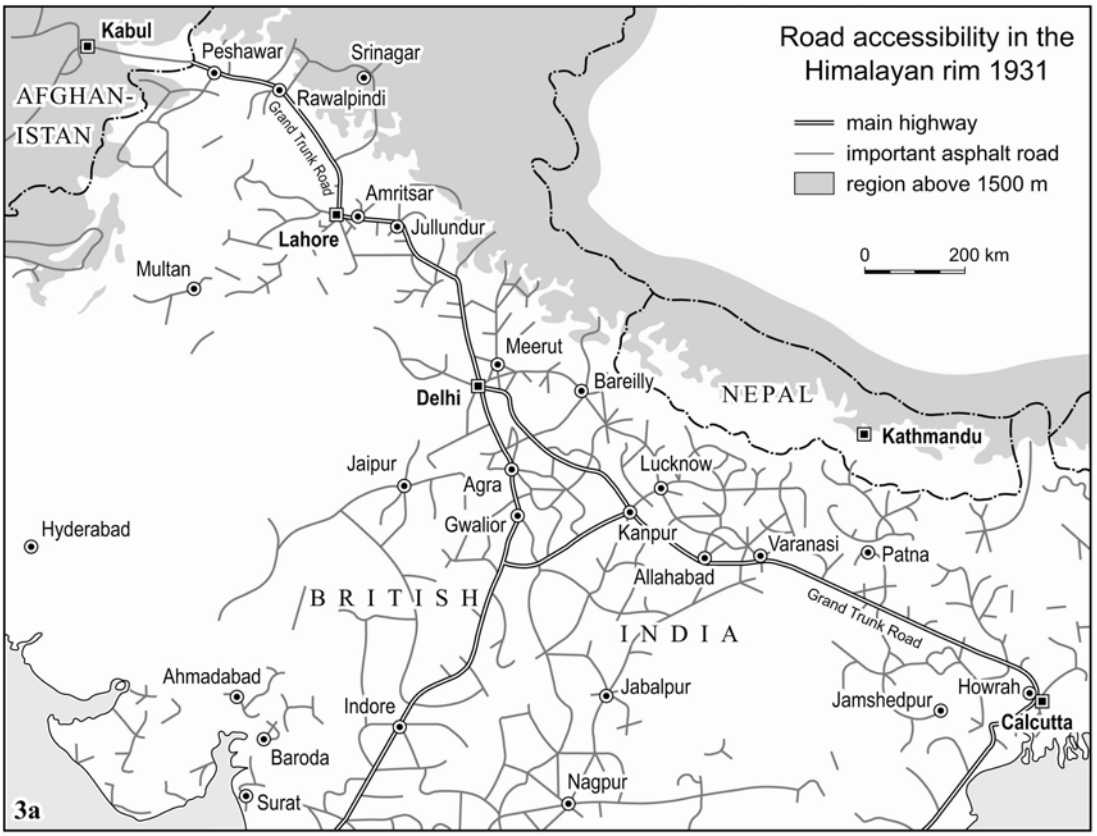
(7) Air traffic between the Punjab and Gilgit was introduced as early as 1927.

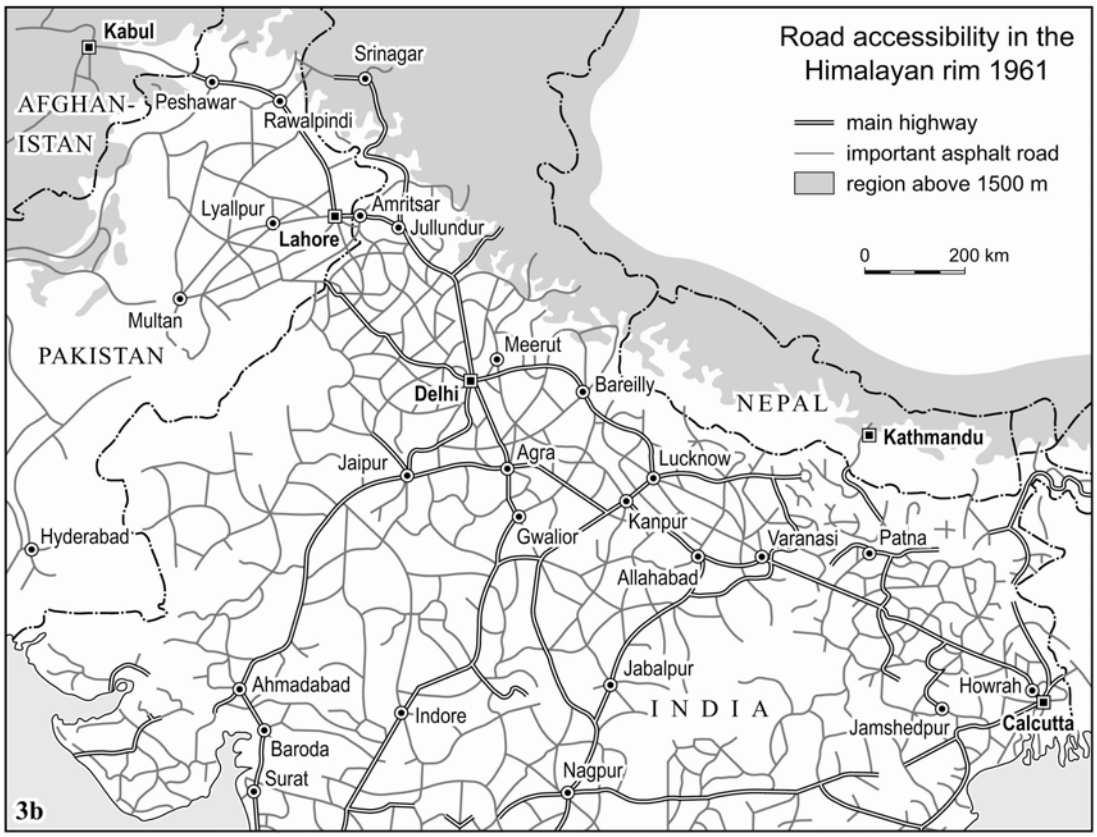
Table 1 Major trans-montane road systems in High Asia

Mountain range	Destination	Name	Pass	Altitude (m)[1*]	Length (km)[2*]	Date[3*]
Hindukush	Kabul-Jalalabad-Peshawar	Khyber Road	Khyber	1067	232	1963
	Kabul-Qizil Qala-Dushanbe	Salang Road	Salang	3600	497	1965
Pamir	Osh-Khorog	Pamir Highway	Akbaytal	4655	728	1932
	Dushanbe-Kala-i-Khum-Khorog	Novo Pamir Highway	Khabur-abot	3252	536	1940
	Khargosh-Khorog	Pamir-Ishkashim	Khargosh	4344	280	1940
	Murghab-Tashkurgan	Gorno Badakhshan-Sarikol	Khulma	4363	150	2004
Pamir/Karakoram	Khunjerab-Tashkurgan	Friendship Highway	Khunjerab	4550	120	1968-86
Pamir/Kun Lun Shan	Kashgar-Tashkurgan		Subash	3900	294	1958
Tienshan	Kashgar-Naryn-Bishkek	Xinjiang-Kyrgyztan	Torugart	3752	600	1983
Kun Lun Shan	Yarkand-Gartok	Aksai Chin Road	Khitai	5341	1200	1956-57
Karakoram/ Himalaya	Khwazakhela-Chilas	Indus Valley Road	Shangla	2150	278	1959-65
Karakoram	Thakot-Khunjerab	Karakoram Highway	Khunjerab	4550	735	1964-78
	Gilgit-Skardu	Skardu Road	-	-	210	1950-68
	Abbottabad-Gilgit	Kagan Route	Babusar	4173	420	1948-49
Himalaya	Rawalpindi-Srinagar	Kashmir Road			320	
	Jammu-Srinagar	Banihal Road	Banihal	2196	330	1955-60
	Srinagar-Leh	Ladakh Road	Fatu La	4100	435	1962-74
	Leh-Khardung La-Thoise	Nubra Road	Khardung La	5636	80	1980
	Birgunj-Kathmandu	Tribhuwan Rajpath	Daman		221	1953-56
	Kathmandu-Xigazê	Arniko Rajmarg	Zanglu	5481	500	1963-67
	Kalimpong-Xigazê		Natu La	4310	370	
	Phuntsholing-Paro/Thimpu	Indo-Bhutan Highway			180	1959-1962

1*, Altitude refers to highest point of road (pass);
2*, Length indicates total destination between connected points;
3*,Date describes the period of construction and/or the opening of sealed surface/asphalt roads.
Source: extended and updated table from Kreutzmann (1998: 23)

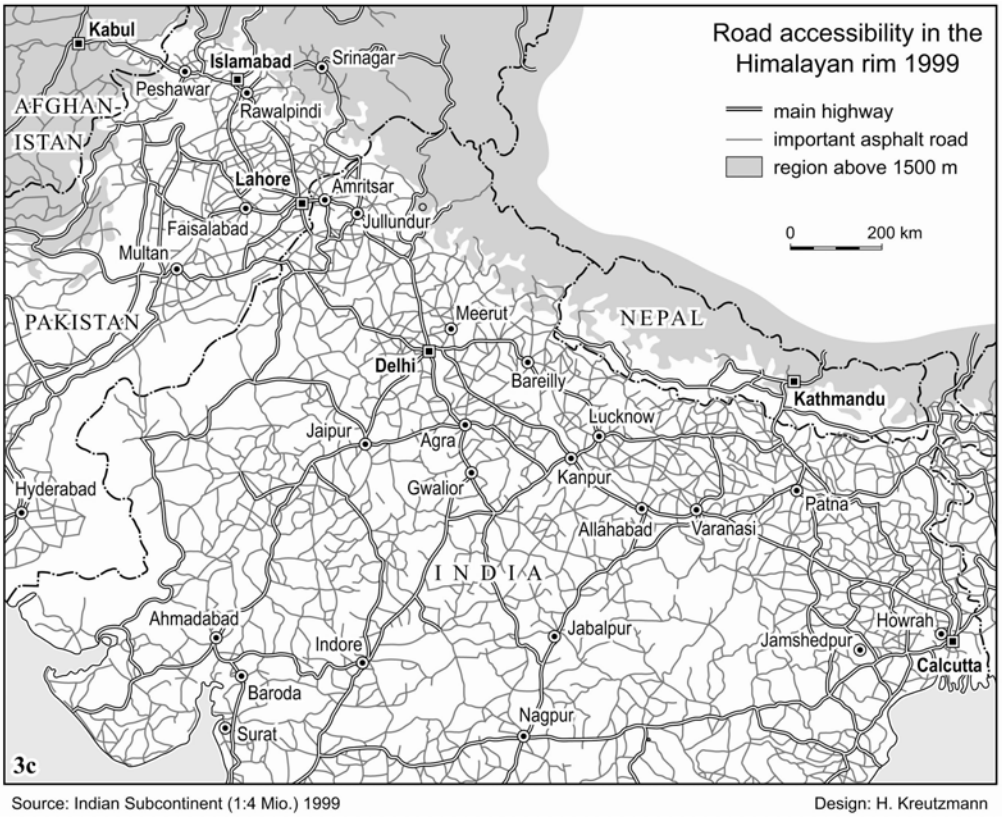
Figure 3a +3b Road network in the southern rim lands of the Himalayan arc in 1931, 1961





Source: modified after Schwartzberg [2]1992, p. 125 Design: H. Kreutzmann

Figure 3c Road network in the southern rim lands of the Himalayan arc in1999



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.（Clark 1960） At this early stage of development the Central Government covered "75 per cent of all nonrecurring expenditure and 50 per cent of recurring expenditure" （Clark 1960） trying a holistic approach by introducing new wheat varieties, new plows, different fruit varieties, improved livestock (pedigree bulls, merino rams etc.), silkworm production, and new weaving looms for local tweeds. Out of the annual Village Aid Programme's budget of Rs 300,000 (app. US $ 63,000)[1] two thirds were spent on transport alone. Lacking accessibility inferred high costs for the allocation of goods from the lowlands at 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* (1 *maund* equals 37.32 kg) of goods from Rawalpindi to Gilgit amounted to Rs 25 to 35 while the carriage cost on the return trip ranged between zero and Rs 8（Staley 1966） highlighting the limited to negligible exports from the mountains. Air transport from down country to Gilgit increased the cost of a sack of chemical fertilizer from Rs 5 by a factor of twelve to Rs 60.（Clark 1960） In order to reduce transportation costs of basic goods, an Indus Valley Road from Swat was proposed and in 1959 the construction began (cf. Table 1). 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 KKH (Figure 4) brings in subsidized

(1) The exchange rate was fixed during the 1960s at a value of 1 US $ equalling 4.76 Pak Rs.

foodgrains from down country Pakistan into the region. It is the life line for the ever-growing food deficit of Northern Pakistan (Table 2). 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 the Gilgit District and significantly lower in Chitral and Baltistan. Chitralis seasonally cut off from external supplies until the tunnel under the Lowari Pass might be completed.[1] 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.[2] 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.

As early as 1972 the Government Report of M. Abdullah (1972) advocates the regular supply of

Table 2 Regular import of bulk items from the lowlands into Northern Pakistan in the early 1990s

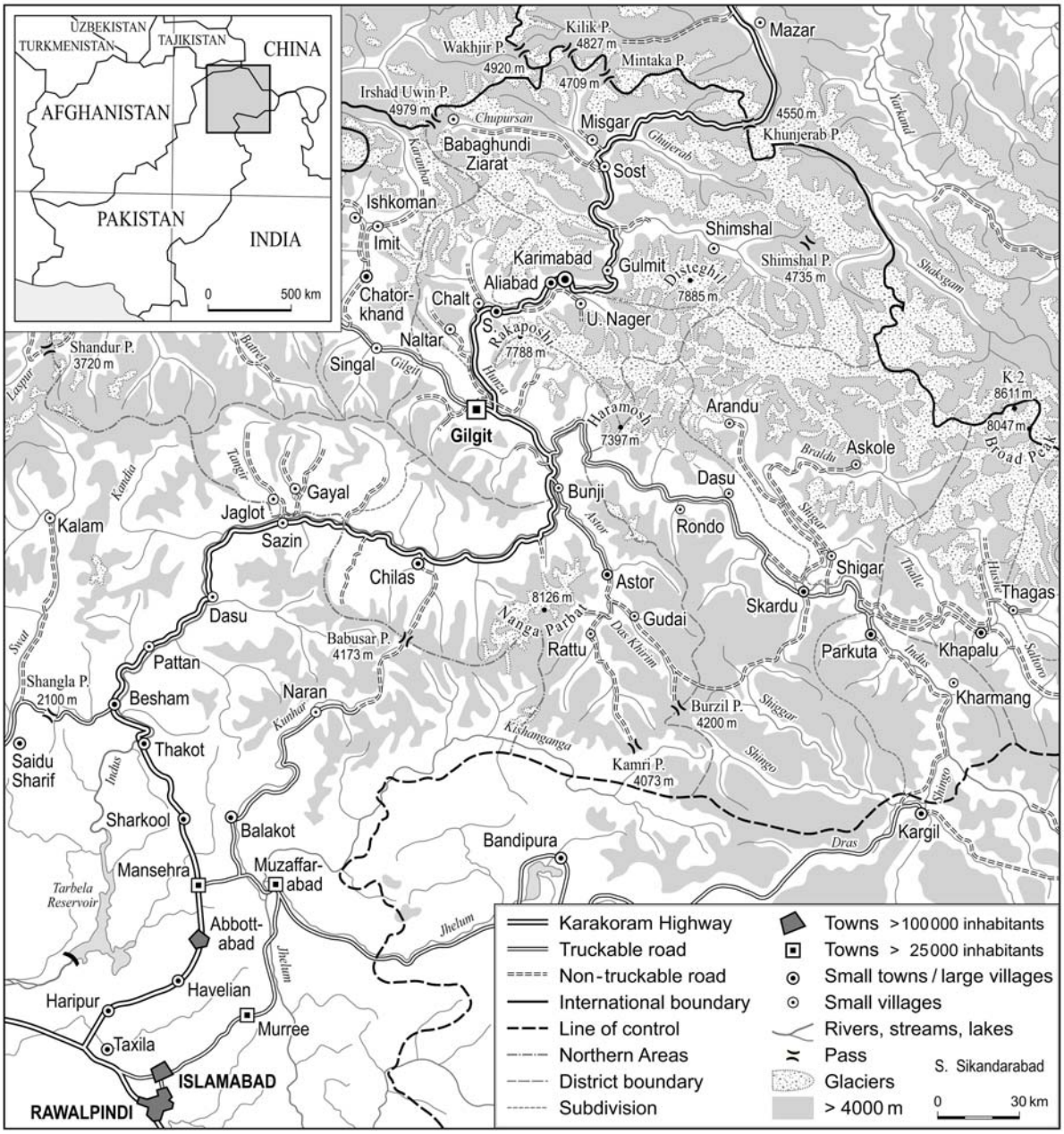
Commodity	Import via Karakoram Highway (million Rs)				Import via Lowari Top Road (million Rs)	
	Gilgit District		Baltistan District		Chitral District	
	Absolute	%	Absolute	%	Absolute	%
Wheat flour and grain	70.00	34.7	3.60	15.4	23.00	49.5
Rice					13.00	28.0
Pulses	7.00	3.5				
Cooking Oil	37.00	18.4				
Fresh Vegetables	9.30	4.6	2.74	11.7	1.61	3.5
Fresh Fruits	5.04	2.5	0.68	2.9	1.83	3.9
Beef and Mutton	29.95	14.9	10.01	42.8	1.21	2.6
Poultry Products	18.30	9.1	5.72	24.5	0.84	1.8
Milk Products	17.57	8.7	0.64	2.7	5.00	10.7
Fruit Juices	1.25	0.6				
Kerosene Oil	6.06	3.0				
Total	201.47	100.0	23.39	100.0	46.49	100.0
Total (Rs per capita)	738.6		83.2		172.2	

Source: data compilation and calculation according to Khan & Khan (1992: 15) and Kreutzmann (1994: Figure 7)

(1) The Lowari tunnel has become a story of its own. After planning for two decades, work commenced in the 1970s but was stopped soon after and never commenced again. The tunnel has become a symbol of un kept promises by prime ministers and candidates to their electorates

(2) 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 by the Indus valley. The road was extended and asphalted in the mid-80s

Figure 4 Karakoram Highway



Source: based on map "Northern Pakistan" published by Culture Area Karakorum Research Project 1999

basic food items to northern Pakistan from the grain chambers of lowland Punjab. The proposed concept favors an exchange of a different range of cash crops from the mountain valleys with surplus staple foods from the plains, with transport subsidized from public funds. In Abdullah's opinion self-sufficiency in grain production cannot be achieved in the mountain valleys. For example, the highly subsidized and competitive price for wheat flour (*ata*) cannot 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. The dependency on down country supplies for other consumer goods is even higher. Consequently, for the first time in history there are now no periods of starvation and famine - the region was notorious for food deficits during colonial times（Kreutzmann 1993b, 1994, 1995a）- for such disasters have been prevented by subsidies and crisis management from the Federal Government

and the World Food Programme.

The observation of Robert Chambers that research and development projects follow networks of roads（Chambers 1983） 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 organizations with international funding have established a number of rural development and community services' projects with substantial impact on the physical infra-structure, local trading, education and health services. Their efforts also focus 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 products, like seed potatoes, vegetable seeds, and special varieties of fruit.(Khan & Khan 1992, Kreutzmann 1993a,b, Streefland, Khan & van Lieshout 1995）. Exchange of goods between lowlands and highlands is the driving force behind this concept.

In periods of crises these development models based on long-distance trading relations for cereals and other staples are vulnerable. A potential scenario such as this must be kept in mind. A closure of the road due to natural or man-made hazards can affect dreadful results. In the case of the Karakoram Highway engineer corps are maintaining the road and most natural hazards – especially in spring and during the monsoon season - are managed in a way that the affected stretches are reopened after a short while. Repair costs are high for providing a yearlong open service line. It is a great achievement that such a road in extremely difficult terrain provides this high standard for transportation. Less control can be executed when highway robbers and/or politically motivated activists threaten the safety of travel along this only lifeline and make use of its uniqueness for executing pressure.

Blockages of the Karakoram Highway have been used by inhabitants of Kohistan in May-June 1993 as a political tool to convince the public administration that timber exports from the few remaining, and rather depleted, natural forests should no longer be prohibited.(1) The royalties for wood-cutting concessions formed an important source of income in colonial times especially for the *jirgadar* (residents with entitlement to community resources) of Tangir and Darel. Local unrest and fluctuating timber prices in Punjab regulated the demand and supply situation. Nevertheless, in 1925, six timber firms as well as the Northern Forest Company were involved in timber procurement from Tangir and Darel. These companies originated from as far as Abbottabad, Sialkot, Lahore, Hoti (near Mardan), and Peshawar.(2) Royalties paid by two timber firms in Darel alone accrued to more than Rs 1.2 million in the course of a few years. In comparison, all subsidies received by the hereditary rulers and governors from the Kashmir Durbar and the Government of India amounted to less than Rs 10,000 prior to 1927 and Rs 12,800 later.(3) Timber has been the most valuable natural resource of the region and source of income for the *jirgadar* (Janjua 1998). In neighbouring Gilgit marginal forest resources appear to be depleted by 1929, as the administration remarked in their annual report: “Wood is every year becoming increasingly difficult to obtain. Practically all the wood on the nearest hills and in the nullahs [valleys] has now been cut, and it is necessary to go far for supplies.”(4) Nevertheless timber harvesting without appropriate replantation has continued in the Chilas District and Kohistan. In recent years royalties from this enterprise, the major source of income for the proprietors of forests, have been at stake. While local residents annually negotiate bilateral contracts with timber dealers, the local foresters from the administration identify suitable stems for cutting. Despite only marginal incomes from toll taxes, the Forestry Department plays a crucial role as a regulative force. Efforts by the administration to restrict over - exploitation and to

(1) The Government of Pakistan initiated a forest management plan for the Northern Areas by 1972 and initiated a moratorium on legal timber exports. Forest departments cooperate since the 1980s with international organizations such as IUCN and WWF improving the protection of forests. The drive to prohibit timber extraction is related to the international cooperation in nature protection and natural resource management. Efforts to control the timber export are mainly directed to illegal felling of trees and extraction of logs (Schickhoff 1998a).

(2) Records in the Gilgit Agency Diaries between 1921-1930 (IOL/P&S/10/973) provide insight into the practices of timber merchants in exploiting the natural foreests of the Western Himalaya and Karakoram.

(3) IOR/2/1083/284: 59.

(4) IOL/P&S/12/3288: 6.

stimulate replantation have been counterchecked by residents with interference in traffic flow and other measures, thus leading to maintain a status quo.

The correlation of road access and forest exploitation or to be more specific the degree of tree felling is quite strong (Schickhoff 1998a, b) . In this context the questions of ownership and control of natural resources such as forests, mineral wealth and water (irrigation and hydro-energy potential) have become political issues relating to the unsolved constitutional status of the Northern Areas. Road blockages occur more frequently as the result of man-made hazards such as *sectarian clashes*. The KKH is taken as a symbolic arena for staging certain demands in the hope that blocking a life line could enhance the negotiating power. Repeatedly *sectarian clashes* resulted in the tragic loss of life and have led to the closure of the KKH due to unpredictable dangers for travellers. These unstable conditions affect other spheres of global and inter-regional exchange like tourism and trade as well.

The initial construction of the KKH as an artery between lowlands and the Karakoram has led to a secondary traffic network of link roads. In the Hunza Valley more than 95% of all rural households are connected with a jeepable or truckable road by now. In the side valleys such as the Gilgit, Ishkoman, Yasin, Astor Valleys and in Baltistan the same density is aimed at and approached. New suspension bridges were constructed by bilateral aid with generous support from donor countries such as Japan, Canada, UK and Germany. The majority of link roads have been financed by public funds and regional development plans, some of them have come into existence as a productive physical infrastructure programme of the Aga Khan Rural Support Programme (AKRSP). Especially in remote areas with only a few scattered settlements private development agencies have taken the role of a planning institution for accessibility and market connection. In contrast to public enterprises, which are based on institutional planning and sub-contracting (*tekedari*) of the work its major advantage lies in a higher cost efficiency. A link road project is executed as a cooperative effort by a village organization, supplying the initial idea, workforce and labour input, and by the development institution, providing labour costs, machinery and technical expertise. With each and every inauguration of a new link road and/or bridge the representatives of the public administration emphasize the quality and low costs of these projects. Even difficult roads such as the Shimshal and Yarkhun Valley Roads including major bridges have been executed in this way. The majority of link road projects have been executed in Chitral (164 of 277 in 1994, World Bank 1996) where traffic infrastructure lags behind in a valley without all-year round connection to down country Pakistan. Road construction has become the second most important activity of this rural development programme only to be surpassed by the construction of irrigation channels (AKRSP 1996). The emphasis on the construction of tertiary roads by private sector development organizations such as AKRSP has continued until today while government maintains the KKH and Skardu Highway as well as constructs secondary roads (World Bank 2002). 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. Recently the Pakistan Poverty Alleviation Fund (*Khush Hal Pakistan*) has adopted the same formula as local NGOs and offers in a major effort support to village communities to connect to the asphalt road network or to alleviate transport between summer and/or pasture settlements and the permanent dwellings through tractor roads.

The result is a high degree of accessibility only reached in the neighbouring mountain areas of India and the Peoples Republic of China, but quite outstanding when compared with the road networks of Nepal. The quality of roads influences the cost of transportation, and being accessible does not mean for a village that it is at par with others. For example, potato dealers from Punjab and NWFP purchase seed and ration potatoes in the Northern Areas. Their main business is concentrated along the asphalted highways, very little commerce occurs on truckable roads and next to nothing along jeep roads although the

purchasing cost for potatoes is substantially lower here.

5 Lessons Learnt from the Case Study for the Improvement of Accessibility in High Asia's Mountains

The observations presented here which were exemplified in the specific case of the Karakoram Highway could be projected onto other major mountain roads and be generalized for the High Asian mountain rim land (Table 3). What are the parameters of importance?

(i) The provision of better transport facilities for mountain people has not been the top priority when major road networks were built. The driving force behind road construction was to comply with strategic interests. Examples supporting this observation are the Pamir Highway, the Salang Road, Pak-China Friendship Highway, the Kashmir, Ladakh and Nubra Roads. Ample evidence has been provided about their military utilization, maintenance by engineer corps and instrumentalization in conflict situations.[1] Especially after the traumatic experience of the India-China War of 1962 several thousands of kilometres of mountain roads were constructed in the Himalayan belt of India. A road construction had led to the confrontation between both major players north and south of the mountain arc. In 1956-57 China built a road across Aksai Chin to connect Xinjiang and Tibet, while both of them claimed Aksai Chin as within their borders. Two years later the

Table 3 Chances and constraints of improved accessibility in High Asia's mountain systems

Chances	Constraints
Reduction of transport costs: adjusted economies of scale	Reduction of competitiveness for locally produced basic goods
Reduction of economic distance: faster travelling and increased mobility through public and private transport	High investments and regular maintenance costs for traffic infrastructure
Provision of food supplies in emergency cases: relief measures from the lowlands can be supplied quickly	Dependence on one life-line with dramatic results in periods of conflict and crisis
Provision of subsidized goods, fuel and basic items at reasonable prices for local demand	Advance of bureaucratic institutions, tax collectors and controlling bodies
Attraction for investors from outside	Immigration of economically potent entrepreneurs who may dominate local markets
Market approach becomes feasible for exclusive and competitive niche products from the mountains	Growing competition between lowland and highland producers where the latter regularly become loosers because of more difficult cultivation techniques and less productivity in the mountains
Resource potential of the mountains becomes accessible and the exploitation of natural wealth becomes economical	Forest depletion, mining and construction of high dams causes natural hazards and/or might damage the environmental balance and lead to loss of ecological potential due to the market demands in the lowlands
Improvement of tourism infrastructure and attraction of more visitors result in higher returns from tourism and affect the job market within the mountains	All problems and challenges connected with seasonality, probability values, uncertainty factors, and long-term investments in the tourism industry are to experienced here in a similar manner like in other tourism destinations
Urbanization and development of market centres	Dependence on lowland markets and connected exchange relations

Source: compilation by author

(1) Cases in point are the Soviet invasion of Afghanistan in 1979, the continuing Kashmir conflict and border disputes in High Asia (Kreutzmann 2004a).

accomplishment in a nearly uninhabited region was discovered and made into a cause of confrontation leading to a war (Ispahani 1989, Maxwell 1972) . The lesson, which was learnt, resulted in increased efforts to control the mountain belt for which a road network on both sides was needed and which came into being. In the case of Nepal these strategic considerations are less prominent and are reflected in the extent of the road network, while Bhutan is rather well served with asphalt roads which all have been built by outside support and probably due to outside interests.

(ii) Motorable roads provided a better access to the mountain valleys, irrespective of the initial purpose and primary interest. Consequently, strategically intended roads work as agents of socio-economic change as a secondary effect, but are not necessarily the results of regional planning efforts. Road access does not reach mountain communities in an even manner. The economic development of Baltistan shows higher growth rates than average Pakistan and than neighbouring districts in the Northern Areas during the 1990s. Baltistan's per capita income has grown from the lowest in Northern Pakistan to second position, only to be topped by Gilgit District, the same applies for the reduction of poverty. Interviews in households, statistical surveys and data collections support the hypothesis that the war economy and the military expenditure in the conflict theatre of the Kashmir border, are the driving force for this economic uplift.[1] The cost is extremely high (Ali 2002) and it shows the preferential development effects due to non-economic parameters. The chances and constraints of accessibility are thus distributed unequally and might cause regional disparities of a substantial variation (Table 3).

(iii) Besides differences in accessibility there are quite some variations in the pace of change along mountain highways. The Karakoram Highway is a good example for major changes in the Hunza Valley and less impact in Kohistan and other valleys along its course. (Daud Kamal & Jamal Nasir 1998, Janjua 1998, Kreutzmann 1991, 1995a, b) Similar developments could be observed along the Ladakh Road or the Jiri Road in Nepal. Less differences occurred along the Pamir Highway in Soviet times.

(iv) The impact of the introduction of road systems and improved accessibility to mountain areas should not be underestimated in respect to nation-building in decolonized states such as India and Pakistan, or in communist countries such as the Soviet Union and the People's Republic of China with their Central Asian Republics, and the "autonomous" regions of Xizang (Tibet) and Xinjiang respectively. Mountain regions have been integrated into nation states and national economies through networks of roads. Consequently exchange relations were strengthened to such a degree that those regions have become actors within the national economy. At the same time they depend on supplies from the domestic markets to a high degree (cf. Table 3). In all cases more goods and valuable items reach the highlands from the lowlands, transport costs are high in highland and very low down the hills, which is not a reflection of slope characteristics but of lack of exportable crops and products for down country markets. Besides market participation with a limited range of specialized and niche products such as seeds, fruit and herbs, the mountain people compensate this inequality of exchange relations in general by human labour migration and/or income from service industries such as tourism. From a macro-economic perspective it seems that mountain societies gain more security of food supply by paying the price of growing dependency on lowland markets and increasing out-migration (cf. Table 3). The dependency perspective might be quite different for individuals. More opportunities for entrepreneurs serve a group of insiders as well as outsiders who invest in certain niches while expecting substantial returns.

(v) Having presented the above observations it has to be clear that improved accessibility does not mean the beginning of a new economic regime or era. The scale, direction and speed of exchange relations are affected and do not necessarily create new phenomena or follow the developmentalist paradigm. Enhanced accessibility can amplify turn-over within existing exchange patterns (Table 3), but can contribute as well to a growing number of

(1) The statement is based on several assessments of socio-economic trends in Northern Pakistan executed by the Aga Khan Rural Support Programme during the 1990s (AKRSP 2000, Mujtaba Piracha & Malik Hunzai (in print) and oral communication with Stephen Rasmussen).

constraints and/or backlashes.

If national and regional planning promotes and demands a higher participation of mountain regions in the domestic and international markets, then improved accessibility is a necessary prerequisite. As achievements towards this aim are often supported by bilateral or international, governmental or non-governmental development aid a survey of existing development activities in the Hindukush-Karakoram-Himalayan arc notably underpins the observation that development projects are strongly linked to networks of roads. An infrastructure-related approach towards development is in tune with demands put forward by the World Bank.[1] On the other hand, the reports on Human Development in South Asia put less stress on the improvement of physical infrastructure than on the provision of social infrastructure and stable political frame conditions for good governance.[2] Here a different view on development is presented which emphasizes that development seems to be rather a societal and not solely a technological problem.

6 Conclusions

Historical evidence from the above discussion points to the fact that a number of motives initiated the construction of major road systems in High Asia's mountains. Development and poverty alleviation do not seem to have been the primary and only driving forces. The questions to be raised are then: Will there be future road construction on a big scale or will there be a need to search for other strategies in order to improve the living conditions in the Hindukush – Karakoram - Himalayan region? Trans-montane road systems have never been cost - efficient from the point of regional development if the mountain inhabitants and their economies would have to bear the costs of investment and maintenance. An overall interest of a nation-state and/or a policy-driven international support could be sufficient for planning and constructing mountain highways. During the Cold War more funds were allocated for such schemes than ever before and after. The road construction projects in Northern Pakistan (NWFP, Northern Areas, Azad Kashmir) and adjacent regions in Northern India (Jammu & Kashmir, Himachal Pradesh) are ample proof for a costly investment. The future will tell if such efforts are feasible again under changed circumstances.

Although improved accessibility remains the preferred path to development it is evident from an analytic point of view that a further inspection of socio-economic frame conditions is required in order to determine the effects of road construction. Development remains a complex phenomenon affecting all walks of life. Alternative approaches refuting the monolithic and resource destroying paradigm of modernization and leading towards the sustainable management of natural and societal resources need to be discussed and evaluated. Although road access might be of utmost importance from a certain perspective, a realistic approach indicates that this target cannot be aimed at without considering given limitations in remote mountain societies.

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(1) The sub-title of the World Development Report for 1994 is "infrastructure for development" (World Bank 1994). Infrastructure is perceived in the broad sense and traffic infrastructure is an important aspect of it.

(2) Reports on "Human Development in South Asia" are published since 1997, cf. Mahbub ul Haq 1997, Mahbub ul Haq & Khadija Haq 1998, Khadija Haq 1999, 2001, Kreutzmann 2004b.

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