
Chapter 8

Thematic Overview

The preceding chapters describe the physical characteristics and human use of mountain areas of Asia on a regional basis. It would be presumptuous to try to synthesise fully these diverse aspects on a continental scale. Therefore, what has been attempted is only an overview with some thematic perspectives. These pertain to the physical environment, cultural diversity, and mountains as an economic frontier in the development context.

8.1 Physical Environment

The configuration of the Asian mountain system has been determined by tectonic forces, the principal one being the impact of the Gondwana Plate thrusting beneath the Angara Plate. This collision is expressed in the great axes of folding spanning the continent east-west and then sweeping south to north through the island chain along the Pacific Rim. The basement of these Tertiary mountains is of Cenozoic formation, less than 20 million years old. The youthfulness of the mountains is evident from their extreme elevation and high relief. Older Paleozoic and Mesozoic formations in the north-west and eastern Australia also have fold mountains, but these have been long eroded into plateaus and peneplains with some ranges as ancient ribs. As a general pattern, the folded structure of the Cenozoic formations has a rough

surface configuration, while those of the Paleozoic and Mesozoic systems are broken or smooth (Table 4).

Apart from structure and relief, other major components that influence physical environment are climate, soils, and vegetation. The mountains of Asia encompass a wide variety of climatic regions as they span a great latitudinal range. This is evident from three extreme regions. The first is one of high altitude at the core of the continent where the climate varies with elevation, latitude, and exposure, tending mostly towards temperate to alpine. The second extreme relates to the subarctic one in eastern Russia with low precipitation and very long winters. The third one relates to the tropical islands of South-East Asia where all months are warm or hot with diurnal rain. Other climatic variations are the semi-arid to arid of the west, wet and dry tropical of the south, and the temperate marine climate of South Australia and New Zealand (Table 4).

The dominant soils of highland Asia are mostly of a mountainous type that is shallow and that may be grass-covered or barren depending on the climate of the elevation zone. Other prevalent types are the chernozemic of the North-West supporting grasslands, the desertic in the West, and the podzolic of the South and South-East. In

Table 4: Physical Components

Region	Structure & Relief	Climate	Soils	Vegetation
South Asia	N: Cenozoic & rough W: Cenozoic & broken S: Precambrian & smooth	N: Temperate W: Semi-arid S: Wet & dry tropical	N: Mountain soils W: Grumosolic, Desertic S: Latosolic	N: Evergreen & deciduous W: Deciduous shrub S: Broad-leaved deciduous
West Asia	N: Cenozoic & rough S: Precambrian & smooth	N: Semi-arid S: Arid	N: Grumosolic S: Desertic	N: Mixed vegetation/grass S: Xerophytic
Central Asia	N: Paleozoic/Mesozoic & broken S: Cenozoic & rough	N: Semi-arid S: Cold arid	N: Mostly desertic S: Mountain soils	N: Grassland S: Barren
North-West Asia	Mostly: Paleozoic/ Mesozoic & broken Far East: Cenozoic & rough	N: Semi arid E: Humid mid-latitude S: Humid sub-tropical	N: Chernozemic S: Mountain soils	N: Mixed forest & tundra S: Mixed forest
South-East Asia	Continental: Paleozoic/ Mesozoic & broken Insular: Cenozoic & rough	Rainy tropical	Continental: Podzolic Insular: Mountain soils	Tropical rain forest
Australasia	New Guinea: Cenozoic & rough Australia: Precambrian/ Paleozoic/Mesozoic & smooth to broken New Zealand: Cenozoic & rough	New Guinea: Rainy tropical Australia: Hot arid in west & humid in east New Zealand: Temperate marine	New Guinea: Mountain soils Australia: Desertic in west & grumalic in east New Zealand: Mountain soils	New Guinea: Tropical forest Australia: Xerophytic in west and mixed forest in east New Zealand: Mixed forest & grassland



Madhukar Rana

20. A Varied Topography, Kabhrepalanchowk, Nepal

terms of vegetation type, most of Central and West Asia are xerophytic with patches of grass. Another extensive type is the mixed forest of deciduous and evergreen species along the southern slopes of the Himalayan Range and much of North-East Asia. South-East Asia is the domain of broad-leaved evergreen forests. The extremes are represented by the boreal taiga of the extreme north and savanna grasslands of Australia.

Asian mountains have great environmental diversity (Plate 20), ranging from cold and hot deserts to tropical rain forests. Yet, whatever the bioclimatic regime, superior elevation and steep slopes are their distinctive features. Elevation exposes them to erosive elements and slope facilitates the gravitational flow of materials downhill. Thus, mountain areas are intensely affected by processes of surface erosion, either of water or wind. This has led to the erroneous notion that the mountains are fragile. In fact, mountains represent a high energy area with much mass wasting without which there would be no depositional material for the adjoining plains. Therefore, it seems more realistic to consider mountains as dynamic landforms.

8.2 Cultural Diversity

Mountain areas are generally considered as refuges or havens for minority peoples (Plate 21).

Yet it was from the highlands of Central Asia that nomadic hordes spilled over to the south and west to create vast empires, culminating in the Mongol conquests that reached their zenith in China during the time of Kublai Khan (1215-94) and in India during the time of Akbar (1542-1605). That mountains do not constitute a barrier to human movement is evident from the ethnic pattern in the Himalayas where the Caucasoid-Mongoloid interface is at a tangent to the crest line. In the west, Caucasoid people predominate, including in the trans-Himalaya, while, to the east, Mongoloids descend down to the Brahmaputra Plain. Indeed, some mountain ranges provide passages for migration, as for example the highlands of Yunnan, which constitute another epicentre of Mongoloid dispersal. Although 27 out of China's 55 so-called national minorities still reside there, the area has been the source of migratory waves of people that diverged west along the Himalayan Range and to the South-East impinging on the farthest islands.

The ethnic distribution of Asia's mountain people has a general pattern of mainly Mongoloid in the east and Caucasoid in the west. Both have southern regional variants; Malay in the former and Semitic in the latter. In West Asia, the dominant groups are Iranian, Turki, and Semitic (Table 5). South Asia is predominantly Caucasoid

Table 5 : Indigenous Culture, Asian Mountains

Region	Race/Ethnicity	Language	Religion
South Asia	N: Caucasoid in the west and Mongoloid in the east W: Caucasoid S: Dravid & Negrito	N: Indo-Aryan in the west and Tibeto-Burman in the east W: Indo-Aryan S: Dravidian	N: Islam, Buddhism & Tribal W: Islam S: Hinduism, Buddhism
West Asia	E: Iranian W: Turki S: Semitic	E: Persian W: Turki S: Arabic	E: Islam (Shia) W: Islam (Sunni) S: Islam (Sunni)
Central Asia	N: Tartar S: Mongoloid	N: Tungusic, Mongol S: Tibetan	NW: Islam SE: Buddhism
North-West Asia	N: Tungu S: Mongoloid	N: Manchu, Samoyed E: Japanese S: Chinese	N: Shamanism E: Shinto/Buddhism S: Confucianism/Buddhism
South-East Asia	N: Mongoloid S: Malayan, Negrito	N: Shan, Thai, Mon-Khmer S: Malay	N: Buddhism & animistic S: Islam
Australasia	N: Papuan C: Austro-Dravidian S: Polynesian	N: Austronesian C: Austric S: Maori	N: Animistic C: Animistic S: Animistic

with Mongoloids in the east and Dravid-Negrito in the Peninsula. Central Asia is mostly Tartar with some Mongol, while North-East and South-East Asia are decidedly Mongoloid. The Austro-Dravid, Melanesian, and Polynesian people of Australasia have only a hoary connection with some mainland groups.

Asian cultural diversity is most pronounced in terms of languages and dialects. Their complexity is illustrated by two legends, one from Daghestan and another from Sikkim. According to the former, an angel sent to distribute a bag full of languages over the earth flew too close to a Caucasus crag that ripped the bag. A hundred languages dropped out before the hole could be closed (Townsend 1972, p9). The latter legend is an East Himalayan version of the story of the Tower of Babel. When the Lepcha tribe of Maong were building a tower to seize the heaven, those above asked the helpers for grappling irons. Workers below misheard the message and, assuming that heaven had been reached, pulled away the main support, and the tower collapsed. Those who survived the disaster suddenly noticed that each spoke a different language (Leifer 1962, p7). Languages do tend to diverge into various dia-

lects due to their mountain isolation. Island interiors show a similar propensity for linguistic differentiation – Indonesian Malay has over 30 regional variants. The major language groups of mountainous Asia are Indo-Aryan in the west, Tungusic and Samoyed in the north, Chinese in the east, Tibeto-Burman in the South-East mainland, and Malay in the archipelago (Table 5). Peninsular India and Australia are distant outposts of the Dravidian and Austric languages respectively.

Compared to the ethnic and linguistic complexity, religious realms have a much broader sweep (Table 5). The plateau of Tibet and adjoining Mongolia is Buddhist (Lamaism). Parts of mainland South-East Asia are also Buddhist (Theravad). East Asia is mostly a mixture of Buddhism, Confucianism, and Taoism in China and Korea and Buddhism and Shinto in Japan. West Asia and part of Central Asia are Islamic with Iran as a Shia island amidst the sea of Sunnis. South Asia is predominantly Hindu and the archipelagoes of South-East Asia mostly Islamic, leaving The Philippines as a Christian outpost. But whatever the regional pattern of higher religions, mountain areas demonstrate a persistence



21. Women of Hunza, Pakistan

of primitive beliefs. Living close to raw nature, the spiritual mould of the people continues to be dominated by the older substratum of anonymous gods and demons, as indicated by their animistic proclivity. Indigenous cultures are, however, being eroded by the dominant cultures intruding from the neighbouring lowlands. These civilisational influences include the Arabic in the west, Indic in the south, Russo and Sinic in the north, Sinic in the east, and Anglo-Saxon in Australasia.

Mountains are generally considered marginal areas for human occupancy due to their harsh environment and poor soil. In Asia also, the highlands have the least density in terms of population, although they are not as sparsely populated as in other continents. In terms of agricultural regions, one significant aspect of the Asian highlands is nomadic herding. This form of economic activity is most extensive in Central and West Asia, around cold and hot deserts respectively. Despite their vast geographical extension, rangelands sustain an economy and material culture based on seasonal mobility and multiple use of animal products (Miller et al. 1997). The second common type is the shifting cultivation which spans the highlands of South Asia and South-East Asia. It is based on adequate precipitation that supports rapid plant regeneration. The third type, rudimentary sedentary farming, is widespread in most areas where rainfall is low. The fourth type, intensive subsistence tillage, is mainly rainfed in humid regions and based on irrigation in the drier west. Plantation agriculture, in which tea, coffee, and other cash crops are cultivated, is confined mostly to the highlands of countries that have a colonial past.

Forests constitute an important resource in the Asian mountains. These include vast stretches of taiga coniferous and mixed forests in the north, sub-tropical forests in the Himalayas and south China, and semi-deciduous monsoon and tropical rainforests in the South-East (Table 4). If inaccessibility preserved them in the past, the same factor acts as a constraint to their commercial exploitation. Yet, extension of roads has opened

many of these areas for timber extraction. These include the north for conifers, east Asia for temperate hardwoods, and the south for tropical hardwoods. Among the various factors that impinge on forest land is that of changing land use and conversion to cropland in tropical areas due to increasing populations (Myint and Hofer 1998).

Asian mountains are also rich in minerals but these occur mainly outside the Alpine fold system on older rock formations. Central Asia and eastern Australia are particularly well-endowed in variety: iron, copper, tin, lead, zinc, gold, and silver. The areas where iron is mined are Peninsular India, Korea, and West Australia. Tin is mined mainly in South-East Asia and copper in Japan, The Philippines, and eastern Australia. Lead and zinc are extracted in North-East Asia and eastern Australia. As with forest resources, the problem with mineral exploitation is transport from the source to the market.

The mountains of Asia are a depository of tremendous hydro resources with immense potential. This inexhaustible resource has been well developed only in Japan, New Zealand, and parts of China. Elsewhere, it has been constrained by the high cost of infrastructure. However, improvements in road access and increasing energy demands have made feasible the execution of many hydropower projects. These have benefitted the mountain economy and also the environment by providing energy from a source other than fuelwood.

Some mountains in Asia have attracted pilgrims since ancient times as spiritual magnets (Birnbaum 1997). Earlier travel for pilgrimage purposes has now been overtaken by secular tourism. Since the turn of the century, high mountains like the Himalayas were centres of exploration and adventure as forerunners of mountain tourism. With rising incomes and more mobility, mountains have become accessible to an increasing number of tourists. For many mountain areas, tourism now constitutes a major source of income. With proper management, the possibilities for expanding tourism are immense, as it is an ever-expanding economic activity.

Mountains are economic as well as political frontiers: the latter expressed as political boundaries make mountains 'hot spots' of armed conflicts. In Asia, such confrontations engulf the Caucasus, Kurdistan, Afghanistan, Kashmir, Myanmar, Mindanao, and West Iran. They will persist with political rivalry among States as well as with mountain people's search for self-assertion and autonomy. In the economic arena, frontier phenomenon need not necessarily be the limit but rather the extension of possibilities. Mountain remoteness has two implications. One is its marginality in terms of the slow pace of innovation. A classic example is the long intervals between the introduction of the potato in different areas of the Himalayas. First introduced into Bhutan in 1774, the potato reached Kumaon in the 1850s, and has had an impact on the economy of Hunza only in recent decades. However slow, technological innovations are penetrating even distant mountain communities. Another aspect of mountain remoteness is the preservation of natural and cultural diversity. These are humanity's most valuable resources. Yet, the path to their conservation is not the current preoccupation with environmental problems, whether in research enquiry or development discourse. Assessments of the mountain environment have ranged from alarmist (Eckholm 1976) to cautionary (Ives and Messerli 1989) scenarios. Much of the crisis scenario is the result of oversimplification and generalisation. As a consequence, development programmes for mountain areas tend to be only *ad hoc* replications of external designs unsuited to the mountain situation (Jodha et al. 1992). Such an approach tends to highlight natural blight and ignore human plight (Gurung 1982). Much of the

sediment flowing from the highlands is generated through natural processes that are beyond man's capacity to manipulate (Bruijnzeel 1989).

Mountain people have continued to survive by contending with natural risks as well as exploitation from the centres of political and economic power. Thus, most Asian countries that fall within the category of the least developed are mountainous and land-locked. Even in relatively better developed countries, mountain areas remain zones of least development as the periphery of the periphery. The relationship between natural environment and economic development is generally considered to be antagonistic. This notion is based on the general observation that the more advanced the economy, the greater the pressure on natural resources. Emanating from the same logic, the relationship between environment and development in the mountains should be considered inverted since some of the environmental stresses there are due to extreme poverty. Here poverty is the basic cause of poor land management, and the consequence of poor management is deepening poverty (Blaikie and Brookfield 1987). Despite their intimate knowledge of the natural world through accumulated experience, it is poverty that compells mountain people to overexploit scarce resources. One needs to appreciate this economic compulsion for survival. The problems of the mountain environment cannot be solved without improving the economy of mountain inhabitants. Therefore, the emphasis should be on economic development in order to transform these frontiers into areas of benign environment sustained by the mountain people themselves.

