

Chapter 2

A Geographical Introduction to Aizawl City

2.1 Introduction

The formation of hill towns and cities in the eastern part of Indian Himalayas was closely associated with the colonial occupation of the region (Giri 2006). Important urban centres such as Aizawl and Lunglei in Mizoram; Kohima and Mokokchung in Nagaland; Shillong and Cherrapunji in Meghalaya were British military outposts during the colonial period (Saitluanga 2014a). Some other towns developed as ‘expanded version of trade centres’ (Khawas 2006: 274). Many of these towns were created as an enclave at least during their formative years (Sarkar 2006).

Most of the Himalayan states are economically underdeveloped. They wholly depend upon the central government and international financial agencies for major developmental projects. The growth of hill towns and cities is therefore seen as exogenously induced rather than an endogenous surplus production (Giri 2006; Das 1995). Administrative and trade centres during the colonial era have grown rapidly in the post-Independence period in spite of their lower carrying capacity due to unfavourable topography and fragile natural environment. Large-scale rural–urban migration has been witnessed mainly because of limited scope for non-agricultural activities in rural areas and the pull factors of cities including better employment opportunities, more secure social environment, and better quality of life (Datta 2006). The growth of cities is also enhanced by incorporating nearby villages into city properly through physical extension or government legislation. However, no hill city in the Eastern Himalaya was properly planned and designed to cater a large population. The topography and underdeveloped nature of economy have limited the scope of physical expansion and development of hill towns and cities (Khawas 2006; Kumar 2015). As a result, Himalayan cities are congested, overcrowded, and expanding vertically on the unstable geology.

Himalayan cities are therefore experiencing huge deficiency in urban infrastructures and low quality of life (Khamrang 2012; Dikshit and Dikshit 2014; Saitluanga 2014b). Slow rate of infrastructural development could not cope up the

basic needs of the rapidly growing urban population (Saitluanga 2013). Some scholars maintained that rural poverty as the main cause of urbanization (Kumar 1993). However, efforts to restrict rural–urban migration by improving quality of life in rural areas have often had the reverse effect (Parnwell 2013) and are, therefore, not advocated. Instead of checking the growth rate of cities, there is a strong call for improvement of urban infrastructures and civic amenities (Ganguly 1995).

2.2 The Study Area

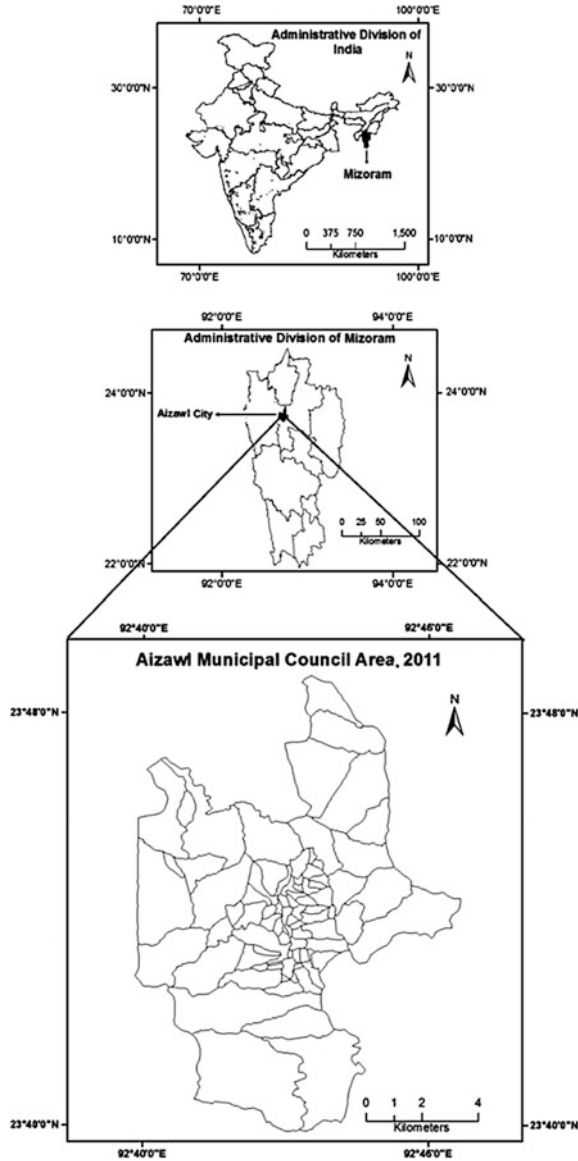
Located at the southernmost part of the Patkai Hills of the Eastern Himalaya, Aizawl is the administrative capital of Mizoram (Fig. 2.1). Better known as Lushai Hills in geographical term, Mizoram is the second smallest state in India. The city derived its name from a combination of two *Mizo* words, ‘*Ai*’ meaning *Aidu* (*Amomum dealbatum*) and ‘*zawl*’ meaning ‘flat’. It may mean a piece of flatland where *Aidu* grows. It is a common tradition in Mizoram to put *zawl* as a suffix in naming of places whenever flatlands or small mounds are found in the midst of hills. The place from where Aizawl derives its name is presently occupied by Raj Bhavan—the official residence of the Governor of Mizoram and its surrounding areas.

Aizawl is the primate city of Mizoram. It comprises 26.89% of the entire population of the state. In 2011, the population of Aizawl was 293,416 and classified as a class I city as per the Census of India classification of urban centres. The city is administered by Aizawl Municipal Council (AMC). In 2011, there were 19 municipal wards under the AMC which altogether comprises 82 local councils (LCs). The boundaries of all local councils and their respective codes are provided in Fig. 2.2 and Table 2.1. These local councils, previously known as village councils (VCs), are the lowest administrative units. Each local council is locally known as *veng*. However, it is to be noted that the term *veng* has more meaning than a mere administrative connotation. It is related to neighbourhoods where residents are bound by unity and feelings towards each other through shared history, participation in religious congregations, and/or community organizations like Young Mizo Association (YMA) within the territory of *veng*. Throughout the book, terms such as *veng*, locality, and neighbourhood have been used synonymously.

2.3 Growth of Aizawl City

‘Fort Aijal’ was established in 1890 as a military station by the colonial East India Company (called *Kumpinu* by the Mizos) who invaded the Mizos and subsequently occupied their homeland. The Aijal (or Aizawl) outpost consists of a military barrack and a few bungalows. It was fortified to accommodate around 200 military

Fig. 2.1 Location of Aizawl city



personnel only. With increasing migration from the surrounding areas, the outpost was gradually surrounded by civilian residential areas. As per the Census of India, the population of Aizawl increased rapidly after the British occupation from 325 persons to 2890 during 1901–1911.

The colonial administrators, however, perceived the new outpost as an enclave and tried to discourage indigenous population to settle nearby the fortified post. To restraint the increasing population, the colonial administrators imposed two

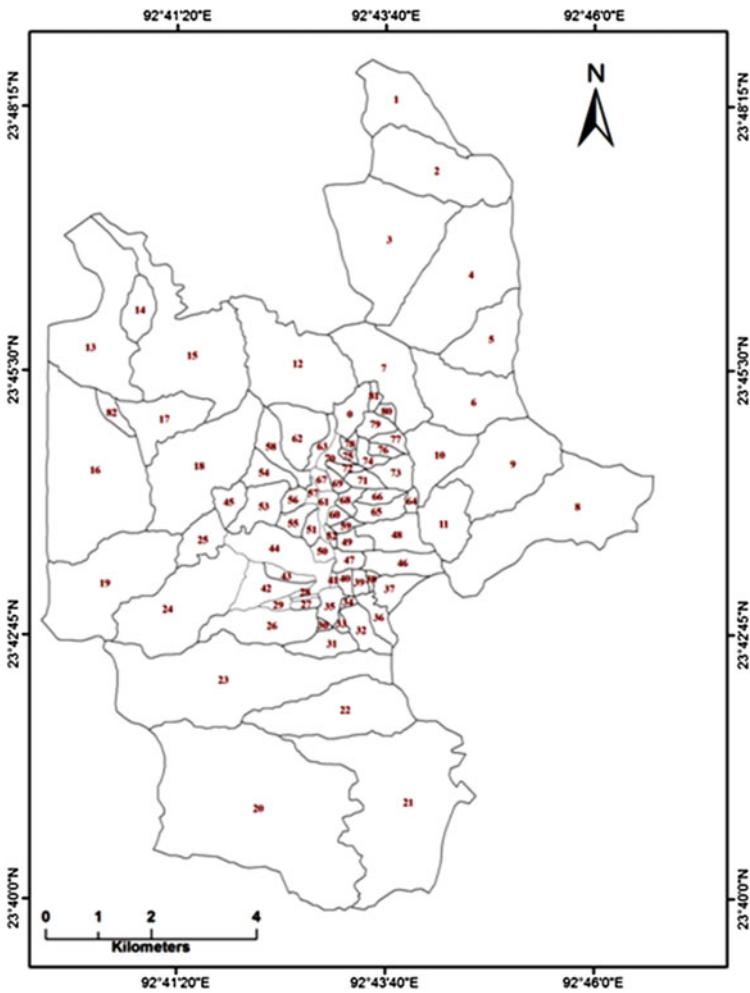


Fig. 2.2 Local councils in Aizawl city

methods of exclusion—a restriction of the number of houses for each locality and the introduction of a new kind of tax known as ‘Personal Residence Surcharge’ (PRS). The PRS was introduced only in Aizawl (Fort Aijal) and Lunglei (Fort Lungleh)—the headquarters of the then North Lushai Hills and South Lushai Hills, respectively. The main objective of the system was ‘to control and discourage settlement around Aijal and Lungleh’ (McCall 1980: 78). The colonial administrators justified the enactment of this tax by claiming that increasing migration to these two settlements will increase deforestation and environmental degradation through shifting cultivation (McCall 1980). The tax was, however, not levied to government employees. The government also exempted the permanent staff of the

Table 2.1 Code of local councils, Aizawl city

Code	Local council	Code	Local council	Code	Local council	Code	Local council
0	Chaltlang	21	Melthum	42	Bungkawn	63	Chite
1	Selesih	22	Saikhamakawn	43	Bungkawn Vengthar	64	Armed Veng South
2	Durtlang North	23	Tlangnuam	44	Khatla	65	Armed Veng
3	Durtlang	24	Maubawk	45	Zonum	66	Zarkawt
4	Durtlang Leitan	25	Govt. Complex	46	College Veng	67	Chhinga Veng
5	Muanna Veng	26	Mission Vengthlang	47	Venghlui	68	Electric Veng
6	Zuangtui	27	Khatla South	48	Bethlehem Vengthlang	69	Chanmari
7	Bawngkawn	28	Khatla East	49	Bethlehem	70	Ramthar
8	Zemabawk	29	Nursery	50	Tuikual South	71	Aizawl Venglai
9	Zemabawk North	30	Model Veng	51	Tuikual North	72	Ramthar North
10	Thuampui	31	Kulikawn	52	Chawnpui	73	Ramhlun South
11	Falkland	32	Venghnuai	53	Zotlang	74	Ramhlun Venglai
12	Edenthar	33	Thakthing	54	Dinthar	75	Ramhlun SC
13	Sakawrtuichhun	34	Dam Veng	55	Kanan	76	Ramhlun Vengthar
14	Phunchawng	35	Mission Veng	56	Dawrpui Vengthar	77	Laipuitlang
15	Rangvamual	36	Salem	57	Vaivakawn	78	Ramhlun North
16	Tanhril	37	ITI Veng	58	Tutthiang	79	Bawngkawn South
17	Chawlhmun	38	Republic Vengthlang	59	Saron Veng	80	Chaltlang North
18	Luangmual	39	Republic	60	Dawrpui	81	Tuivamit
19	Lawipu	40	Upper Republic	61	Hunthar		
20	Hlimen	41	Tuikhuahtlang	62	Chanmari West		

Welsh Mission at Mission Veng from the payment of PRS although the number of houses was fixed at 82 by mutual agreement between the two parties.

Another method to contain migration into Aizawl was the introduction of number of permissible houses for each locality. Table 2.2 gives the number of houses permitted in each locality amounting to a total of 722 houses within the settlement. Thakthing Veng, which is presently a small locality, was permitted the highest number of houses while Maubawk was permitted only 20 houses. There were, however, certain localities in which the numbers of permitted houses were not earmarked. These include Sriman Tilla (present Zotlang), Dokhama Veng (Bungkawn), Survey Tilla (Dinthar), Vaivakawn, Rangvamual, Zemabawk, and Chanmari Veng (which consists of Hmarkaii Nu Veng and Suklala Veng). No Mizo house was found in the first four localities but occupied by the immigrant Gorkhalis from Nepal who came along with the British. On the other hand, the last three localities were not expected to survive long due to their small populations (McCall 1980). There were also a few government quarters at Babutlang area of Zarkawt Veng but it was also not considered as a locality due to the absence of civilian household. As a result of these methods of residential restrictions imposed to the native people, the population of Aizawl was a little higher than 3000 only in 1931 census.

The occupation of Aijal by the British introduced not only a new kind of political and economic system, but it also created a new form of residential pattern markedly different from the native settlements. In a traditional Mizo village, the Chief's house usually sited at a flat hilltop which is the most central and most accessible location. Nearby, the Chief's house were found the *Zawlbuk* or Boys' Dormitory and the houses of the Chief's councillors and other important persons. The common people were located away from the Chief's house. In bigger villages, localities or *veng* were differentiated on basis of clan or sub-tribe. However, there was no such kind of discrimination and physical restriction. Even the Chief's house

Table 2.2 Number of houses permitted in various localities of Aizawl, 1932

Sl. No.	Name of locality	No. of houses permitted
1	Venghlui	30
2	Tlangnuam	50
3	Thakthing	150
4	Kulikawn	50
5	Khatla	10
6	Maubawk	20
7	Mission Veng	82
8	Dawrpui	30
9	Chhinga Veng	25
10	Chaltlang	75
11	Luangmual	50
12	Hlimen	50
13	Durtlang	100

Source McCall (1980: 101)

was open to anyone at any time. With the advent of the British, residential segregation was observed for the first time. The colonizers fenced their residences and barracks to separate them from the local people. Fenced residential area was provided with proper drainage, well-ventilated housing, proper sewage disposal, and water supply. All these provisions were made to reduce the risk of infection from endemic tropical and contagious diseases. It has elsewhere been argued that fear from diseases provided a pretext for segregation in colonial cities (Home 2013).

The case of the Christian missionaries was different. For them, it was unthinkable to segregate themselves from the local people whom they had to befriend and proselytize. However, they maintained strict regulations on Mission Veng, which they set up as their headquarter after having bought the land from the Chief of Tlangnuam. They maintained that houses should be kept apart by 75-foot distance and that every household should have a toilet. The domestication of animals was not allowed. Unlike the traditional Mizo house in which windows were allowed to open to a few elite, windows were made mandatory in every house. The intention of the missionaries was to keep their backyard clean and to prevent diseases from spreading. In this way, Mission Veng may be considered as the only locality which was established with at least minimal efforts on planning.

India attained Independence in 1947, and the post-Independence era has witnessed unprecedented growth of Aizawl population (Table 2.3). During 1951–1991, the decadal growth rates of Aizawl city had continuously exceeded 3 digits. A number of factors may be attributed to the high growth rates witnessed during this period. Firstly, with the Independence of India in 1947, the strict migration control policy imposed by the colonial Raj came to an end. This resulted in uncontrolled migration to Aizawl from various corners of Mizoram due to various socio-economic push–pull factors.

Table 2.3 Growth of population, Aizawl city, 1901–2011

Census year	Population	Stage	Intercensal year	Decadal growth rate (%)	Average annual exponential growth rate
1901	325	Initial surge	–	–	–
1911	2890		1901–1911	789.23	21.85
1921	3034	Period of stagnation	1911–1921	4.98	0.48
1931	3250		1921–1931	7.12	0.68
1941	4780		1931–1941	47.07	3.85
1951	6950		1941–1951	45.39	3.74
1961	14,275	Rapid growth stage	1951–1961	105.40	7.19
1971	31,740		1961–1971	122.35	7.99
1981	74,493		1971–1981	134.69	8.53
1991	1,55,240	Declining growth stage	1981–1991	108.39	7.34
2001	2,28,280		1991–2001	47.05	3.85
2011	2,93,416		2001–2011	28.56	2.51

Source District Census Handbook, Aizawl District, 1961–2011, Directorate of Census Operation, Mizoram

Secondly, the great *Mautam* or ‘bamboo flowering-induced famine’ in 1958 was another important factor of increasing growth of urban population in Mizoram. Due to flowering of bamboos which occurred every 48 years in the region, the population of rodent would increase dramatically within a short period of time. Jhum fields were attacked by the rodents, and the entire rice crop in the field and granaries were eaten up. The Assam government, under which Mizoram was a district at that time, was accused of failing to take proper ameliorative measures. The famine caused great hardship in rural areas, and many people migrated to Aizawl and other towns where provisions of food were better. *Mautam* has a far-reaching impact on the political economy of the state. The increasing discontentment against the Assam government was one of the most important immediate causes of the 20-year-long statewide insurgency or specifically, an Independence movement of the Mizo National Front (MNF) from the Union of India. During this Insurgency or *Rambuai* period (1966–1986), many villages were burnt and there were forced evictions and mass displacements of villagers in order to consolidate them into one big village so that the movement and supplies of the MNF insurgents could be contained (Nunthara 1996). This resulted in large-scale migration to the relatively safer Aizawl town out of fear of violence. Thirdly, the upgradation of the Mizo Hills District Council into Union Territory in 1972 was highly significant in the process of urbanization. With the attainment of Union Territory, the power and functions of the local government increased manifold which resulted in large-scale opening of government jobs and concomitant increase in employment opportunities in other sectors. Lastly, a number of outlying villages were incorporated into the city properly during this period. The number of localities in Aizawl town has increased from 26 in 1982 to 82 in 2011. As a result of all these factors, the growth of Aizawl population during 1961–1981 was spectacular. The decadal growth rates were 122.35 and 134.70% during 1961–1971 and 1971–1981, respectively.

Interestingly, a reversal of population growth rate has happened after the 1980s. During 1981–1991, the decadal growth rate reduced to 108.39 from 134.69 in the preceding decade. During 1991–2001, the growth rate declined abruptly to 47.05. The growth rate went down further to 28.56 during 2001–2011. It seems that the pull factors of the city have been waning with increasing population as a result of decreasing employment opportunities in the post-statehood era that diseconomies of scale started to operate. Moreover, district capitals such as Lunglei, Champhai, Kolasib, Serchhip, Saiha, Lawngtlai, and Mamit, and other bigger towns such as Saitual, Khawzawl, and Thenzawl may serve as counter-magnet towns to reduce the inflow of internal migrants from other places.

The rapid urbanization in the post-Independence era has led to the proliferation of housing units at less favourable sites like pre-uninhabited low-lying or very steep sloping surfaces as well as at more favourable sites in the peripheral areas of the city (see Fig. 2.3a, b). While peripheral settlements were incorporated into the city, the existing localities were divided into multiple localities as less favourable sites in these localities were gradually occupied. Moreover, multi-storey buildings started to dominate the skyline of the inner city to accommodate the increasing population.



Fig. 2.3 Picturesque landscapes of Aizawl city from vantage points. **a** A view of northern part of Aizawl city from Pi Hangi Lunglentlang, Durtlang Leitan. **b** A view of western part of Aizawl city from Babutlang, Zarkawt

Table 2.4 gives the growth rates of various municipal wards of Aizawl city from 1981 to 2011. Municipal wards were classified arbitrarily into outer periphery, inner periphery, outer core, and inner core on the basis of their relative location from Bara

Table 2.4 Average annual exponential growth rate, municipal wards of Aizawl city, 1981–2011

Ward No.	No. of local councils	Main locality	Location ^a	Expo gr. rate (%)		
				1981–1991	1991–2001	2001–2011
1	6	Durtlang	OP	NA ^b	6.49	3.03
2	2	Chaltlang	OC and IP	7.96	2.82	3.98
3	5	Ramhlun North	IP	4.90	5.66	2.58
4	4	Ramhlun South	IP	12.98	4.55	3.14
5	3	Chanmari	IC	1.86	2.55	0.42
6	3	Chanmari West	IP and OP	NA ^b	4.59	3.09
7	4	Zemabawk	OP	7.15	3.00	4.76
8	4	Armed Veng	OP	8.40	2.73	2.02
9	3	Dawrpui	IC and IP	1.96	4.74	0.74
10	4	Zotlang	IP	12.88	8.24	2.62
11	5	Luangmual	OP	13.97	2.81	3.37
12	3	Tuikual	IP	6.28	2.59	1.68
13	3	Vaivakawn	OC	2.83	4.76	1.72
14	3	Khatla	IP	7.16	3.59	2.65
15	5	Bungkawn	IP	6.46	3.60	2.33
16	3	Bethlehem	OP	10.84	3.45	2.64
17	4	Republic	IP	2.00	3.53	1.28
18	6	Mission Veng	OC, IP and OP	7.32	3.76	2.06
19	5	Kulikawn	OC, IP and OP	2.80	5.79	2.55

^aOP Inner periphery, IP inner periphery, OC outer core, IC inner core

^bMunicipal ward nos. 1 and 6 were neither included nor existed in 1981 census

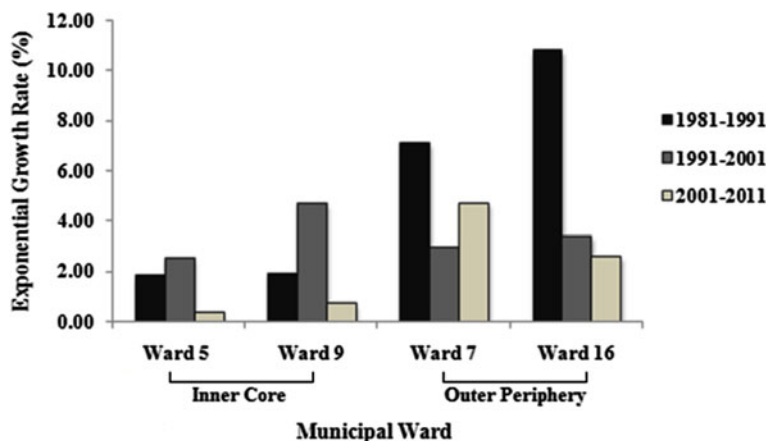


Fig. 2.4 Population growth rates in inner core and outer periphery, Aizawl city

Bazar—the central business district (CBD) of Aizawl city with the exception that all local councils covered by the most important route of the city, i.e. Bawngkawn–Kulikawn (B–K route) has been put under either inner core or outer core.

The growth rates of inner core localities have been relatively low in comparison with their counterparts in outer and inner peripheries and outer core areas (see Fig. 2.4). Municipal Ward No. 5 comprising of 3 localities including Chanmari, Zarkawt, and Electric Veng has been showing the lowest growth rates since 1981–1991 to 2001–2011. This residential cum commercial area is a very high-density zone and seems to have been already congested in 1981. In spite of the increasing vertical growth of residential buildings, the scope of increase in population is highly limited. Another inner core area includes Dawrpui locality of Ward No. 9. This ward also comprises Saron Veng and Chhing Veng which, however, is included under inner periphery due to their outward growth towards the eastern slope. This ward has also witnessed slower growth during the observed period.

The highest growth rates have been observed in the outer peripheral areas including Municipal Ward Nos. 11, 7, and 16. These municipal wards include Luangmual, Zemabawk, and Bethlehem and their respective adjoining localities. These peripheral localities are preferred destinations of poorer new migrants. Relatively lower land value and house rent, more available spaces for construction of housing, and easy accessibility are some important determining factors of higher growth rates of these wards.

An observation into the spatial growth of Aizawl city suggested that the process of ‘exurbanization’ (Champion 2000) has been taking place slowly in the city. The peripheral, low-density, semi-rural settlements located beyond the city properly are growing faster in comparison with the centrally located, high-density core areas of the city. The process of exurbanization in a less developed city like Aizawl,

however, seems to be different from that in developed cities. The majority of the residents of the peripheral areas are poorer people while the inner areas are inhabited by more affluent people. Yet, it has been noticed that there is a tendency among a few sections of the affluent people to move to more favourable and accessible locations in the peripheral areas.

2.4 Physical Environment of Aizawl City

Residential pattern and quality of life in a particular place are largely determined by the nature and characteristics of the physical environment. The topographic characteristics of an area are one of the most important determinants to ascertain the suitability of an area for developmental activities. In hilly region, terrain information is a major factor used to evaluate the suitability of a hill town for urban development (Kumar S and Kumar R 2014).

Like most of the settlements in the Patkai Hills of the Eastern Himalaya, Aizawl city is a hilltop settlement, resting on the crest of a north–south trending hill which is surrounded by a number of hillocks. In the past, hilltops were considered by the tribal communities as the most suitable places for habitation. Valleys and plains, which are, of course, very limited, were infested by the most dreaded diseases in the past like Malaria. Waterborne diseases such as cholera and diarrhoea may easily spread in the valleys. On the other hand, hilltops are not only healthier but are also easily garrisoned as defensive sites. The slopes of the hills were suitable for practicing shifting or Jhum cultivation. Moreover, they can easily obtain spring water nearby the village for domestic purpose. Nowadays, a hilly topography has many disadvantages for settlement because of high construction cost of buildings, roadways, and other infrastructures in the steeply sloping hills. Moreover, they are more susceptible to landslides and other natural hazards. The widespread availability of medicines has allowed people to overcome limitations imposed by nature, and people started to inhabit low-lying valleys.

2.4.1 *Altitude and Slope*

As shown in Fig. 2.5, the entire city of Aizawl is classified into 5 altitudinal areas viz. very high, high, medium, low, and very low altitudinal areas by applying equal interval method of classification. The highest class with above 1200 m occupies an area of 2.26% of the total geographical area of 97 km². On the other hand, an area of 0.39 km² that constitutes 0.41% of the total area is classified under the lowest group (below 300 m). Half of the city's geographical area lies within the height of 600–900 m and is classified as medium altitudinal range as shown in Table 2.5.

The spatial distribution of altitudinal classes shows an interesting pattern. From Fig. 2.5, it may be observed that an elongated ridge cuts across the entire city into a

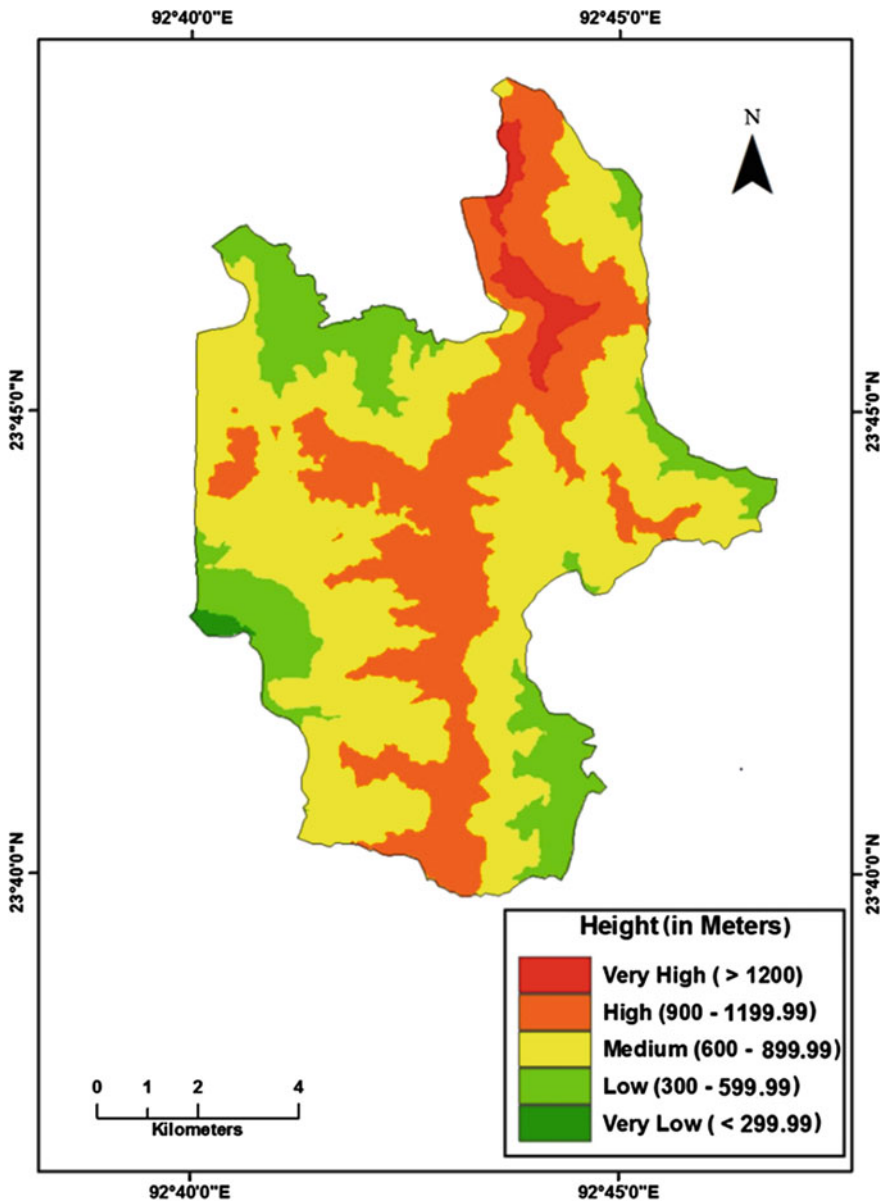


Fig. 2.5 Altitude map of Aizawl city

western and eastern part. This is the main ridge on the crest depending on the utilization of of which the most important road of the city is running through. Some ridges extend from the main ridge in the western and eastern directions. Low altitudinal places (below 600 m) are normally found at the peripheries. The highest points are found at the most

Table 2.5 Classification of altitude and slope, Aizawl city

Category	Altitude		Category	Slope	
	Area (in km ²)	Percentage		Area (in km ²)	Percentage
Very high	2.19	2.26	Very steep	3.40	3.51
High	29.93	30.86	Steep	16.66	17.20
Medium	48.65	50.16	Moderate	37.54	38.70
Low	15.83	16.32	Gradual	30.88	31.80
Very low	0.39	0.41	Gentle	8.52	8.78
Total	97.00	100		97.00	100.00

Source Computed from LISS-III, IRS-1C, 2008

Table 2.6 Hillocks and their altitudes, Aizawl city

Sl. No.	Hillocks	Altitude (m)
1	Durtlang	1362
2	Laipuitlang	1160
3	Chaltlang	1143
4	Berawtlang	1042
5	Seventhdaytlang	1026
6	Zotlang	985
7	Luangmual	1063
8	Tuikhuahtlang	1125
9	Tlangnuam	1112
10	Thakthing	1068
11	Hlimen	1165

Source Computed from LISS-III, IRS-1C, 2008

northern part of the city. Although the city's landscape is distinctly defined by the elongated Aizawl Tlang (Hill) from which the city takes its name, the city may be described as 'City of Hillocks' as it comprises a number of small hills. Some of the more important hillocks and their altitude are given in Table 2.6.

Slope refers to a change in elevation over a certain distance. It is measured by calculating the difference in the elevation from one point to another divided by the distance between those points. The city is divided again into five zones on the basis of degree of slope viz. very steep slope with more than 40°, steep slope (30°–39.9°), moderate slope (20°–29.9°), gradual slope (10°–19.9°), and gentle slope (>9.9°) as shown in Fig. 2.6. Very steep and steep sloping surfaces constitute 20.71% of the total area while 40.58% comes under less than 20° slope.

Many parts of the city are steeply sloping surfaces and they look like uninhabitable areas. In the past, steep hillslopes and low-lying areas were usually avoided. However, due to population pressure, even the most steeply sloping surfaces have been utilized for construction of residential buildings. Landslides frequently occur on these steeply sloped terrains during rainy season when excessive Monsoon rain falls on the relatively young and immature geology of the Mizo Hills.

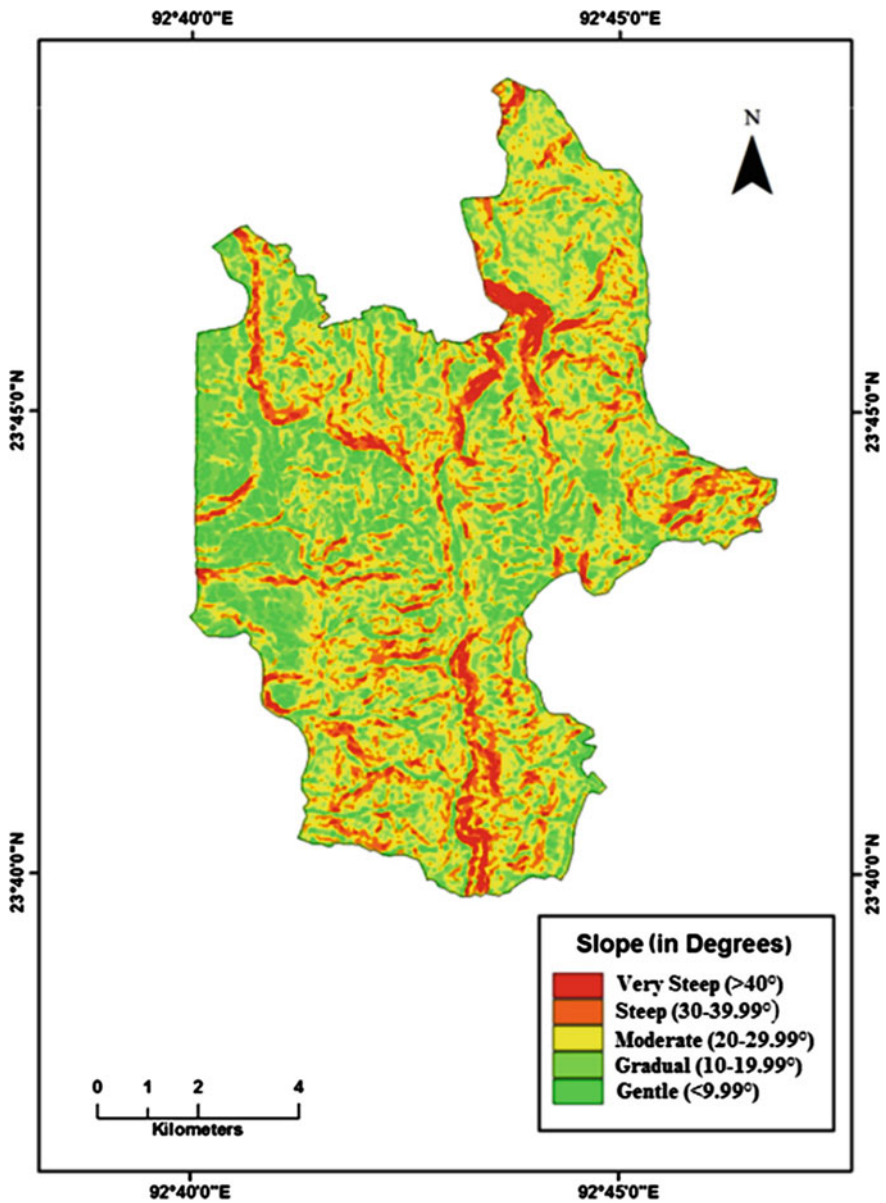


Fig. 2.6 Slope map of Aizawl city

Slumping or sinking of land is another geological hazard that frequently occurs during Monsoon in some parts of the city. Tectonically, the region is a product of prolonged subduction of the Indian plate into the Eurasian plate. As a result, the

geology is highly unstable and the Indian National Disaster Management Authority (NDMA) put the entire region as one of the most high risk zones of the country.

2.4.2 Climate

In spite of its tropical location, Aizawl city enjoys a pleasant and moderate temperature throughout the year due to its high altitude and abundance of forest. The climate is considered to be *Cwa* type according to the Köppen-Geiger climate classification. The maximum and minimum temperature of Aizawl ranges between 26.3 °C in April and 11.4 °C in January during 1937 and 1992. Local climatic condition does not differ much in comparison with other attributes of physical environment. In the absence of secondary data and the difficulty to ascertain microclimatic differences at small area, no attempt was made to analyse spatial variation in climatic condition. However, it has been observed that valleys and low altitudinal places are relatively warmer and more humid in comparison with hilltops.

Seasonal distribution of rainfall affects the quality of life and environment in a number of ways. Mizoram receives heavy excessive rainfall during Monsoon season that lasts for 6 months while very little rainfall has been received during the remaining 6 months (Table 2.7). The average annual rainfall in the city is 2350.9 mm. out of which 60–70% falls during the Monsoon period. The marked seasonal variation in rainfall distribution has heavily affected the domestic water supply. For domestic use, the city is almost wholly depending upon Tlawng River which is the longest river system in the State that runs along the western side of the city. Normally, the volume of the river declines heavily during dry season.

Table 2.7 Mean monthly temperature and rainfall, Aizawl city, 1937–1992

Month	Mean temperature (°C)		Mean rainfall (mm)
	Maximum	Minimum	
January	20.4	11.4	13.4
February	21.7	12.8	23.4
March	25.2	15.6	73.4
April	26.8	17.5	167.7
May	26.3	18.1	289.0
June	25.5	18.9	406.1
July	25.3	19.1	320.4
August	25.5	19.1	320.6
September	25.7	19.2	305.2
October	24.7	18	183.7
November	23	15.1	43.2
December	21	12.2	15.3

Source India Meteorological Department (www.imd.gov.in/doc/climateimp.pdf)

A number of city dwellers are forced to buy water from private sellers while many low-income households have to depend on public water springs. The public-owned springs are mainly found in the lower reaches of the hillslopes. During dry season, people have to wait for a long time to fill up their buckets.

2.5 Land-use and Land Ownership

Cities are built on land, and the nature of land on which the city is founded may determine the layout of the city. The layout of a plain city may be different from the layout of a hill city due to difference in the nature of land. Moreover, the location and characteristics of land influence the value of the land which in turn affects residential choice. Hilltops are more preferred and more valued than hillslopes and valley floors. The values of hillslopes may also vary depending upon the degree of the slopes.

Land is a highly valued and scarce resource in Aizawl city mainly due to availability of a few good and suitable lands for housing. Land-use is directly related to land value. A particular land-use may increase or decrease the value of the land. It also affects the quality of the natural environment, with impacts on air quality, water quality, water supply, the costs of natural hazards such as flooding and earthquakes, the probabilities of hazards including flooding, and the functioning of terrestrial and aquatic ecosystems. Land-use decision affects the well-being of individuals.

Forest area covers 68.52% of the total geographical area of the city. The tropical environment is highly conducive to natural growth of vegetation. High proportion of forest cover may be attributed to the topography of the city and the gradual incorporation of peripheral localities within the ambit of municipal area. Very steep sloping areas with rocky surfaces are not suitable for housing and are normally come under scrub or open forest depending on the utilization of the land (Table 2.8).

As shown in Fig. 2.7, dense forests are found at the low-lying, unpopulated peripheral areas. In hilly tropical areas, the undergrowths of forests are thickly covered by plants and shrubs which provide an ideal home for poisonous insects and

Table 2.8 Distribution of various land-use/land cover in Aizawl city

	Area covered (km ²)	Percentage
Dense forest	27.22	28.06
Open forest	39.25	40.46
Cropping area	6.15	6.34
Scrub	10.69	11.03
Settlement	12.38	12.76
Others	1.31	1.35
Total	97	100

Source Computed from LISS-III, IRS-1C, 2008

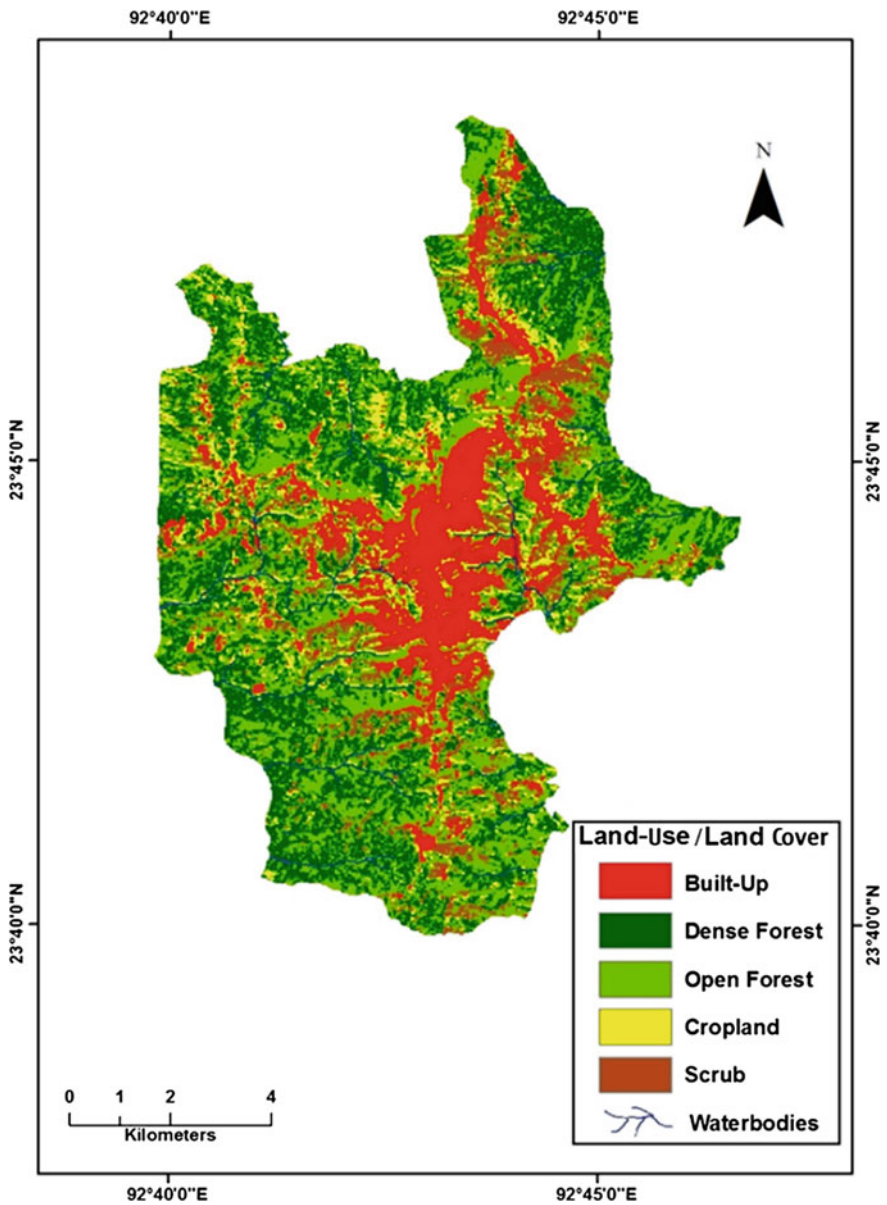


Fig. 2.7 Land-use/land cover map of Aizawl city

malarial parasites. As a result, the importance of green spaces such as natural parks and forested areas has been ignored by many people. However, recent decades have witnessed increasing awareness amongst the local people on the importance of forest for conservation of biodiversity and maintenance of microclimate.

Built-up area concentrated along the main ridge of the city which is the also the most densely populated part of the city. Generally, roadways are constructed at the crest of the hills and new settlements may come up after construction of roadways. Separation of built-up areas into commercial and residential land-uses is rather difficult because shops and markets are usually found together with residential dwellings at the same building. The geographical areas covered by industrial and recreational land-uses are almost negligible.

Land ownership is another important factor influencing urban residential pattern and quality of life. In a traditional Mizo society, land belonged to the Chief while the commoners have free access to every pocket of land except the Jhum field allotted to a particular household for a particular year (Saitluanga 2014c). The disruption of the traditional culture of the Mizo society after the British occupancy including the abolition of chieftainship and the introduction of monetized economy has led to the opening of land to the market. After the Independence, village councils were constituted in every village as elected representatives to administer the villages on behalf of the government. The village council has the right to allocate land for residential purposes. The government can issue Land Settlement Certificate (LSC) to those who obtained village council pass for holding the land. In this way, land becomes a private property and a freely saleable commodity.

With increasing urbanization, land becomes a scarce resource and a highly valued immoveable property. The value of land has been skyrocketing in bigger towns. The poorer section of the population could not afford to buy a parcel of land in the more accessible locations. Here, there is a continuity of the past traditional residential pattern. The richer section occupies the central areas, and the poorer section moves to the peripheries. The richer people utilize their advantageous position and locational advantage by obtaining and accumulating land and also inventing in their owned land by constructing multi-storey buildings for renting to accommodate the flourishing commercial activities and increasing population. This kind of process may be described as the starting point of capitalism or in Marxian terminology, a process of 'primitive accumulation' which is the process of accumulation that logically has to precede capitalist accumulation (Marx 1967).

2.6 Transportation Network

Transportation networks shape patterns of urban growth. Good and efficient transport network is a prerequisite for urban development and enhancement of quality of people's life. Generally, the best locations in the city are the most accessible locations. In fact, transport network is an important factor that affects land values within a city. In Western cities, the 'flight to the suburbs' happened as a result of the introduction of mass transit system. In contrast to developed plain

Table 2.9 Important transport routes in Aizawl city

Sl. No.	Name of road	Average width (in m)	Length (in km)
1	Zemabawk–Bawngkawn	7.70	2.98
2	Bawngkawn–Ramhlun	7.60	1.18
3	Bawngkawn–Chaltlang	6.20	1.20
4	Chanmari–Kulikawn (main road)	8.12	3.50
5	Chanmari–Zion street	4.45	0.90
6	Vaivakawn–Chanmari	6.20	1.06
7	Vaivakawn–Temple Square	7.30	1.34
8	Zodin Square–Sikulpuikawn via Khatla	6.90	1.02
9	Treasury square–Sikulpuikawn via Republic	6.90	1.02

Source Town and Country Planning Wing (2002), Government of Mizoram

cities, suburbs failed to develop in less developed hill cities like Aizawl city due to underdeveloped transport network as a result of unfavourable topography.

Transport network in Aizawl city is highly determined by the physiography of the city. The most important route runs along the north–south direction at the crest of the main ridge of the city (see Table 2.9 and Fig. 2.8). This route—Bawngkawn to Kulikawn route (B–K route)—connects the most important sites of economic, social, and political institutions. Land value is the highest along this route. Other important routes which are connected to B–K routes include Vaivakawn–Temple road which meets B–K route at Temple square; Vaivakawn–Chanmari road at Chanmari Veng; College Veng–Republic road at Sikulpuikawn; Ramthar–Bazar Bungkawn road via Electric Veng at Bazar Bungkawn; and Maubawk–Khatla road at Khatla.

Traffic congestion is one of the most challenging problems faced by the city. Roads are usually narrow and congested. Absence of land-use planning, rampant growth of motor vehicles, narrow roads, and maximum utilization of space along prominent transport routes have combined to create the city as one of the least inaccessible cities in the country. The quality of life of urban dwellers and the livability of the city have been adversely affected by the bad quality of roads.

The city has been witnessing expansion of residential areas along existing or new transport routes and vacant areas nearby existing neighbourhoods which were not populated earlier due to their steeply sloping topographies. With underdeveloped transport networks and problem of accessibility, proximity factor became an important factor determining residential choice. Therefore, unfavourable sites nearby markets and high-status residential areas are gradually inhabited. These sites could be obtained at a very reasonable price. It seems that, under factors of different constraints, an individual's residential choice is more determined by the price of land as well as distance to markets and well-established localities.

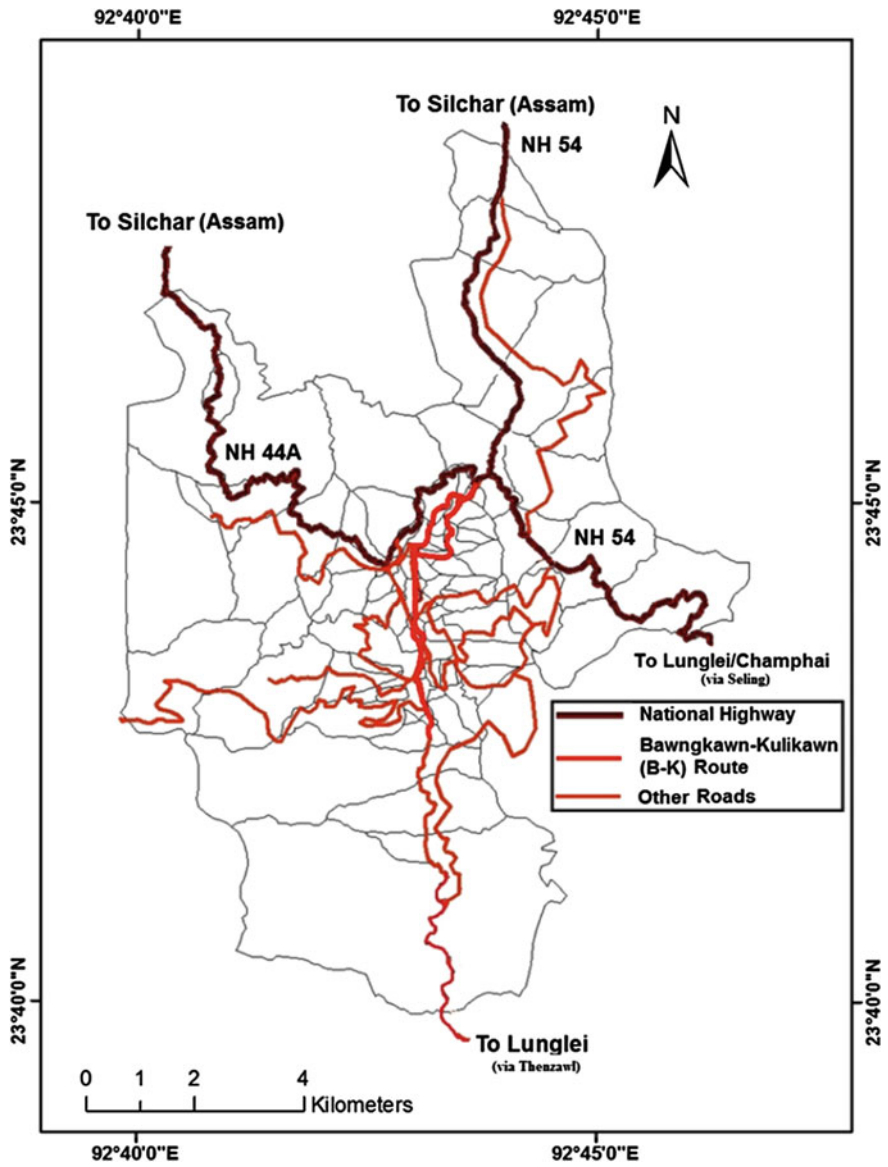


Fig. 2.8 Road map of Aizawl city

2.7 Economic and Social Environment

Cities are the focal points of regional growth and development. The immature process of development in the state has been lopsided and highly imbalanced in favour of Aizawl city. It has been argued that the increasing accumulation of resources by the city due to sustained favouritism has been creating discontentment among the lower towns, thereby producing serious repercussions in the political economy of the state (Saitluanga 2010).

Change in the occupational structure is considered as one of the most reliable measures of development. From Table 2.10, the urbanization effect may be observed as the percentage shares of both cultivator and agricultural labour that have been declining consistently during 1981–2011. On the other hand, the proportion of ‘other workers’ comprising of workers engaged in trade and commerce, government jobs, teaching, transport, factory, plantation and mining, and construction has been increasing from 80.97 to 91.79% during the same period.

Sectoral distribution of workers clearly reflects the economy of the city as well as the regional economy that has been witnessing the decline of traditional economy and the rise of market economy. In the absence of large-scale manufacturing industries, the overwhelming share of ‘other workers’ may also reflect the status of the city as the main administrative, commercial, and educational centre. It may also be observed that work participation rate (WPR) has increased tremendously from 32.91 to 45.40% during 1981–1991 but has also declined rapidly to 40.78% in 2001–2011. Female work participation rate has shown a positive trend until 2001 but also declined considerably during 2001–2011. The declining work participation rate after 1991 census may indicate the problem of unemployment which is one of the most acute problems in the state. The city attracts many unemployed youths from various corners of the state. Many of them are educated people who seek blue-collar jobs while there are also skilled and semi-skilled job seekers who try to earn a living in petty business, construction works, and low government jobs.

Large-scale rural–urban migration is one of the main reasons behind the rapid growth rate of Aizawl city. The city also attracts manual workers from its neighbouring states. These non-local interstate migrants are mainly employed in informal and service sectors as porters, construction workers, barbers, etc. Without industrialization, the city failed to provide employment opportunities to job seekers. It seems that the absence of large-scale industrialization, however, helps in the process of social homogenization in terms of racial and ethnic distribution. Interstate migrants are few, and the city’s population is dominated by the local Mizo tribe. A number of tribes belonging to Mizo-Kuki-Chin group from outside Mizoram are also settled. These people have their own dialects but they also speak the local Lusei language and by and large, socio-spatially assimilated into the Mizo mainstream. Besides, many of them are not permanently settled but short-term migrants due to employment and other reasons.

The ethnic homogeneity has been maintained due to internal and external forces that keep the entire state isolated from the rest of the country. The remoteness of the

Table 2.10 Sectoral distribution of workers, Aizawl city, 1981–2011

Year	Main workers to total population (%)	Cultivator to total workers (%)	Agricultural labourer (%)	Household industry worker (%)	Other workers (%)	WPR ^a (main + marginal)	Female WPR (main + marginal)
1981	32.03	9.52	6.20	3.29	80.97	32.91	18.47
1991	36.94	9.02	4.26	1.02	83.57	45.40	37.57
2001	33.77	3.57	2.16	1.89	92.53	44.15	38.46
2011	34.80	2.96	2.20	1.83	91.79	40.78	31.37

Source District Census Handbook, Aizawl District, 1961–2011, Directorate of Census Operation, Mizoram

^aWPR refers to work participation rate

state in terms of location and distance, low level of industrialization, and the landlockedness of the region coupled by India's indifferent attitude towards neighbouring countries could be considered as the main reasons behind the economic isolation and ethnic homogeneity. Moreover, there is a widespread feeling of insecurity towards assimilation by the neighbouring *Vai*. Till today, colonial legislative provision like 'Inner Line Regulation' that bar non-local people to enter the state without getting legitimate permission called 'Inner Line Permit (ILP)' is still strictly enforced. Non-local people are not permitted to obtain or purchase any land within the state. Thus, while most of the cities throughout the world are tending towards heterogeneity, Aizawl has shown the opposite by increasing the proportion of the tribal population who are mostly local people (Table 2.11). During 1981–2011, the proportion of Scheduled Tribe population (mainly consisting of the local tribe) has increased from 88.68 to 91.83%. On the other hand, the proportions of the non-local population including the Scheduled Castes and the 'General' people who are neither Scheduled Castes nor Scheduled Tribes have been decreasing during the same period.

In terms of social development measures, Aizawl city has set a high standard among its contemporary cities in India. Literacy rate is relatively high with 98.36% of the total population considered literate. It has increased from 76.45% in 1981 (Table 2.12). On the other hand, average size of household has been decreasing as experienced in Western developed countries. During 1981–2011, the mean household size decreased from 5.91 to 4.83. Decreasing household size may imply fragmentation of households which in turn lead to increasing demand for housing. It

Table 2.11 Composition of ethnic population, Aizawl city, 1981–2011

Year	Scheduled Tribe population (%)	Scheduled Caste population (%)	General population (%)
1981	88.68	–	11.32
1991	91.42	–	8.58
2001	91.95	0.06	7.98
2011	91.83	0.18	7.99

Source District Census Handbook, Aizawl District, 1961–2011, Directorate of Census Operation, Mizoram

Table 2.12 General socio-economic characteristics of Aizawl city, 1981–2011

Year	Total population	Household size	Sex ratio	Literacy rate (%)	Female literacy rate (%)
1981	74,493	5.91	895	76.45	–
1991	1,55,240	5.49	926	95.41	94.6
2001	2,28,280	5.09	968	97.35	97.39
2011	2,93,416	4.83	975	98.36	98.2

Source District Census Handbook, Aizawl District, 1961–2011, Directorate of Census Operation, Mizoram

may also imply the decline of traditional lifestyle in which large family size was equated with honour and prestige.

Females occupy an important role in the Mizo community. Female literacy rate is almost equal to male literacy rate. Sex ratio is also considerably high with 975 females per 1000 males. The gap between female work participation rate and total work participation rate is also decreasing. Females are involved in almost all kinds of work except in transport and related sectors. On the other hand, they dominate trade and commercial activities. All of these are good indicators of low level of gender discrimination, if not absent at all.

Religion is an aspect of culture of paramount importance. Religions affect political systems and policies; shape environmental values; impact economic development; and, frequently, are used by politicians to create dissension and strife (Weightman 2011). According to Census of India 2011, the percentage of Christian population in Aizawl city was 93.63%. Christianity in Mizoram is divided into a number of denominations. The two major denominations are the Presbyterian Church and the Baptist Church of Mizoram which dominated the northern and southern parts of Mizoram, respectively. Being located in the northern Mizoram, the most dominant denomination in Aizawl city is the Presbyterian Church. Non-local residents are either Hindus or Muslims while some of them are converted to Christianity.

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