PROSPECT OF URBAN LAND USE IN CHURACHANDPUR TOWN

Kh. Pradipkumar Singh and Miss. Chingljamnawi

ABSTRACT

Urban sprawl is a worldwide phenomenon. In developed countries, 3,000 sq. km area of agricultural land are covered every year by urban growth. In India, 180,000 sq. km (5.5% of the total area) is under and other non-agricultural uses (Citizens Report, 1982). Growth of town has a great bearing on physical expansion and population growth of any region. It is the process of transformation of both productive and unproductive land for residential, commercial and other purposes. The present study is mainly focused on the land use/land cover changes due to population pressure in the Churachandpur town.

INTRODUCTION

Churachandpur town is located in the south west of Manipur. It extends between 24°18'36"N to 24°22'48"N latitude and 93°40'17" E to 93°44'11"E longitude. It covers an area of 83.69 sq. km. It is the district headquarters of Churachandpur district. The study area is an intermontane basin, located in the Khuga valley (Plate 1). It has an average elevation between 800m to 900m above mean sea level. The town is drained by Tuitha on the eastern part of the valley. It is joined by tributaries such as Koite Lui, Chengkon Lui and Lanva Lui. These are rain fed streams which get dry during off seasons. On the Tuitha River in the south of the town, Khuga Dam is constructed across the river.

The climate of the town is generally cool and pleasant. In summer, though days are hot, morning and night are cool while in winter often there are frosts at night and morning are foggy till the days are advanced. Spring, summer, autumn and winter are conspicuous. The average temperature ranges from 57°C to 35°C. The average annual rainfall is about 1,800mm and humidity ranges from 67 to 100%.

Alluvium consisting of clay, silt and loam occurs in the Khuga valley. The thickness of alluvium deposit in this area is about 10m. It is mainly composed of alluvial fans consisting of course pebbles and cobbles with some sand, silt and clay. Residual soils occur in the hill. The organic content of the top soil is comparatively high in the agricultural land of the valley and low in the hills surrounding the plain.

As Churachandpur town is located in an intermontane valley it is surrounded by hill ranges on all sides. These hills are mostly degraded and converted into open scrub (Plate2). Pine, bamboo, teak and eucalyptus are found in patches in the degraded forest. Banana, sugar-cane and pineapple are also grown in the area.

OBJECTIVE

The present study has been taken up
a) to examine the growth of population and land use/land cover change
b) to analyse the physical expansion and compared.

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METHODOLOGY

In the present study the relationship between population growth and land use change has been established. The work is based on field data and personal observation, map and satellite imageries are used as primary source. Population statistics is obtained from Directorate of Economic and Statistics.

To detect the land use/land cover change toposheet (SOI) of 1974 with a scale of 1:50,000, IRS-1B image of 1994 with a scale of 1:50,000 and Google earth image of 2006 have been used. The land use/land cover features are categorized into five broad types viz. Built-up and transportation, vegetation, agricultural land, water bodies and others. The five broad types are identified based on visual interpretation of the satellite imageries coupled with field check. The collected statistics have been processed, tabulated and analysed.

POPULATION GROWTH

The single most powerful factor contributing to land use/land cover change is the increasing population. It is due to natural growth and immigration. Natural growth occurs naturally. Immigration is driven by force of 'pull factors' of town and 'push factors' of countryside. Thus, Churachandpur town is the result of natural growth of population and immigration from the rural areas for better livelihood.
Table 1: Population growth of Churachandpur Town.

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Growth rate (%)</th>
<th>Density (sq.km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>8,706</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1981</td>
<td>22,881</td>
<td>162.82</td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td>33,666</td>
<td>47.14</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>52,131</td>
<td>54.85</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>63,883</td>
<td>22.54</td>
<td>763</td>
</tr>
</tbody>
</table>

Records of urban population of Churachandpur are available since 1971 only. It was classified as census town in 1971. In 1994 application of Municipal Council in Churachandpur town as in the case of the other seven municipalities in the valley of Manipur is statutorily debarred by the Manipur Municipalities Act in spite of its urban character. By 2001 census, there was no urban centre in Churachandpur. This is due to socio-political reasons. As it is the district headquarters, its urban character enable the authors to describe as a town.

The urban population of Churachandpur town in 1971 is 8,706 persons. This was increased to 22,881 persons in 1981 with a growth rate of 162.82%. This decade shows the highest growth rate of population. This is mainly due to inter-district migration as non-tribal migrated from valley to hills. The growth rate of non-tribal in Churachandpur district between 1971-81 is as high as 240% (Statistics Office) while that of tribal is 26%. This may be due to increase in urban population as there is limited space in the valley, people out migrate from valley to hills. Moreover, low land values in the district and better prospect may attract the non-tribal from the valley. The surrounding rural population also migrated to town for better livelihood. Between 1981-91, the decadal growth rate witnessed was 47.14% with a population of 33,666 persons. In the next decade i.e., 1991-01, growth rate was 54.85% and population rose to 52,131. In 1991-1997, ethnic conflict between Naga-Kukis had caused in migration in Churachandpur town. Within the same decade in 1997-98, there was ethnic clash between the Kuki-Zoumis in the district, as such, Churachandpur town become the main refuge centre for both the tribes i.e. Kukis and Zoumis. This has greatly increased the town population.

PROSPECTIVE POPULATION PROJECTION

It is assumed that the net population rise during the past ten years was the result of many complex factors, which may occur in the next two decades again and average growth rate of Churachandpur may continue to persist. Thus it may be projected that Churachandpur will have a total population of 70,596 persons by 2011. In the next twenty years the growth rate of population may be in the same trend. If some major industries and other centres of production are established within the town, the population may increase to a higher rate.

Analysis of population projection reveals that the projected population of the town for 2011 and 2021 by arithmetic growth will be 70,596 and 89,061 persons respectively. For the same period by geometric growth method it will be 64,642 and 80,281 persons respectively. While taking the average of these two the population of the town by 2011 and 2021 will be 67,619 and 84,671 persons.
LAND USE/LAND COVER

The land use/land cover of Churachandpur town and its periphery was delineated from the Google Earth image of 2006 with a scale 1:50,000 (Figure 3). The land use/land cover features were categorised into five broad types viz. Built-up and Transportation, vegetation, agricultural land, water bodies and others. This is given in Table 2.

Table 2: Use Pattern of Churachandpur (2006).

<table>
<thead>
<tr>
<th>Land use categories</th>
<th>Area (sq.km)</th>
<th>% to total area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Built-up+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation</td>
<td>32.03</td>
<td>38.27</td>
</tr>
<tr>
<td>Vegetation</td>
<td>5.40</td>
<td>6.45</td>
</tr>
<tr>
<td>Agricultural land</td>
<td>43.42</td>
<td>51.88</td>
</tr>
<tr>
<td>Water bodies</td>
<td>1.57</td>
<td>1.87</td>
</tr>
<tr>
<td>Others</td>
<td>1.27</td>
<td>1.53</td>
</tr>
<tr>
<td>Total</td>
<td>83.69</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Prepared by authors.
PHYSICAL EXPANSION OF BUILT-UP AREA OF CHURACHANDPUR TOWN SINCE 1974

INDEX
- Built-up area
- Road
- River
- Hill

Scale: 1:50,000

1974 (S.O.I Topographical Map) (Fig. 1)

1994 (IRIS-7B LISS III II) (Fig. 2)

2006 (Google image) (Fig. 3)
Built-up and Transportation occupies 32.03 sq. km which is 38.27% of the total geographical land use/land cover. This is the largest land category as settlement is expanded on the valley due to better accessibility. Vegetation covers 5.40 sq. km i.e. 6.45% of the land use/land cover. Natural vegetations are disturbed by the local inhabitants for jhum cultivation and transformed land into degraded forest. Open scrub is a common feature in the hills surrounding the Khuga Valley. Vegetation occurs in small patches in the foothills of the basin. Agricultural land stretches over 43.42 sq. km which is half of the total land use/land cover of the valley. Agricultural wet paddy field is a dominant scene on the eastern part of the town. This is drained by Tuitha and its tributaries. Rice is the dominant crop grown in the valley. Water bodies occupy 1.87% of the area. This comprised of Tuitha River and its tributaries. If the river canal from Khuga Dam is properly developed, it will be the main source of irrigation for the wet-paddy field. These will double the crop production. Thus the Khuga Dam will have great scope after its completion. Others include play ground, open space, brick kiln, etc., and consisted of 1.52% of the total land use/land cover.

**TOWN BUILT-UP AREA**

In 1974, town built-up of Churachandpur covered an area of 12.75 sq. km. Settlement was built along the road side in linear pattern. Settlement also clustered along the cross-road and market centre. People come together for their daily needs. Figure 1 shows the built-up of the town in 1974. Population of the town have increased to 33,666 persons in 1991 as compared to 1971 which was 8,706 persons. This led to increased in Built-up area. Town built-up was 20.1 sq. km in 1994 (Figure 2). This growth of population is due to natural growth and immigration. Population growth and physical expansion goes hand in hand. As population increased, built-up also increased considerably. Built-up by 2006 was 32.03 sq. km (Figure 3).

**Town Expansion**

Built-up increased considerably since 1971. In 1974, it was 12.75 sq. km. Settlement has been increased to 20.10 sq. km in 1994. Within a period of two decade i.e., 1974-1994, the expansion has been 7.45 sq. km. Another rapid growth on built-up is noticed in 2006, town built-up was 32.03 sq.km. as compared to 20.10 sq.km in 1994. Thus, there is an expansion of 11.93 sq. km on the fertile agricultural land (Table 3). The density per sq. km is 763 persons by 2006 (Table 1).

**Table 3 : Expansion of Churachandpur town.**

<table>
<thead>
<tr>
<th>Year</th>
<th>Built-up (sq.km)</th>
<th>Expansion (sq.km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974</td>
<td>12.75</td>
<td></td>
</tr>
<tr>
<td>1994</td>
<td>20.10</td>
<td>7.45</td>
</tr>
<tr>
<td>2006</td>
<td>32.03</td>
<td>11.93</td>
</tr>
</tbody>
</table>

*Source: Prepared by authors.*

Growth of town is due to natural growth, inter-district as well as intra-district migration. Migration has been very frequent due to ethnic clash among the local inhabitants. People came to settle in the town with the hope of getting full security and better livelihood.

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FUTURE PROSPECT OF EXPANSION OF THE TOWN

Town expansion is a common phenomenon that occurs by itself. Encroachment of the fertile agricultural field for built-up was the direction of growth in the town of Churachandpur (Plate 1). In fact, town expansion could not be controlled. So we suggested urban growth in a particular direction of the town.

The site is to the north-west of the town bounded by Koite Lui in the south and Loklao in the north, the western extension is till the foot-hill and the eastern part is bounded by agricultural field. It has an average elevation between 860m to 950m above mean sea level. It covers an area of 14.35 sq. km. The actual surface area is much more than the measured area, which could accommodate larger population and settlement. It enclosed villages of Mongjiang, Zolzam, Vaison and Jikpi Tampak (Plate 3). The villages have a population of 1,149 persons. The area is a folded low lying hill with an average slope ranges between 5° to 15°. Slope is categorised into low level (<6°), moderate level (6°-9°), low gentle (9°-12°), moderate gentle (12°-15°) and steep (>15°) slope. Low level slope occupies a small pocketed area. Moderate level is occurring in the south-east of the suggested site adjoining the agricultural field. Low gentle is found in the north-west corner of the area and in an elongation running from the east adjoining the moderate level and moderate gentle slope ending to the south-west corner of the area. Moderately gentle slope occurs in the higher elevation occupying the largest slope category adjoining the steeper slope. Steep slope occurs in the north which is the highest point of the area.
Soils of the area are developed on shale and sandstone. Soils are formed in-situ except at the foot hill and near the water course where they are of colluvial and alluvial origin. The soils are susceptible to erosion due to steepness of slope and the resulting run-off. The hill and sloppy land has very shallow soil. Thus, soil fertility is low. Laterite soil (oxisols) is the common soil type. It is leached out under the impact of heavy precipitation. The sub-surface horizon is highly weathered which contain iron and aluminium oxides.

The area is drained by first order and second order tributary streams. These are subsequent streams that have developed its valley along an out crop of less resistant rocks in the form of trellis pattern. The site is moderately drained by first and second order tributaries. Gully and sheet erosion are also prevalent. This moderately dense drainage and tectonically stable landmass favours settlement.

Natural vegetation plays an important role in the ecology and economy of Churachandpuri town. The surface is covered with sub-tropical deciduous trees accompanied with bushes and grasses. Valley is utilised for wet paddy cultivation. Along the river side and around settlement areas bamboo and common fruit bearing trees are common.

The urban population of the town by 2001 is 52,131 persons with a growth of 35.42%. By 2006, population was 63,883 persons with a density of 763 sq. km. If the growth trend continues, it is projected that population of the town will be 67,619 persons by 2011. The growth of population in the town is due to intra as well as interdistrict migration. People from the rural village settled in the valley due to easy accessibility, modern infrastructure such as market centre, administrative offices, hospitals, clinics, schools, higher secondary, colleges, communication network and most probably better livelihood. Security is another factor which attracts the rural population to the town as there is ethnic crisis among the inhabitants. Ethnic clash and inter-conflict among the tribal communities in other districts of Manipur attract population from other districts also. At the same time interdistrict migration also occurred during the Kuki-Nagas and Kuki-Zomis conflict. So the town experienced intra-district as well as inter-district migration. The available agricultural land by 2006 was 43.42 sq. km. Within twelve years i.e. 1994-2006, built-up expansion on the agricultural field was 11.93 sq. km. If the growth rate continues, the urban encroachment will engulf the productive agricultural land within a short period. As urban growth is uncontrollable, we suggest built-up in the less productive terrain to the north-west of the town covering an area of 14.35 sq.km with a population of 1,149 persons by 2001. This area has a great scope for settlement development. Low population, less fertile terrain, moderate slope, moderately drained folded low lying hillock, tectonically stable landmass, vegetation mostly bushes and grasses, degraded tropical forest is an ideal landscape for settlement. So, expansion of settlement in the less fertile terrain will enhance agricultural production. The existing fertile agricultural field will double its production with the help of canal irrigation from Khuga Dam Project after its completion. Thus to a large extent, irrigation facility will help farmers for surplus food production enhancing their per capita income.

CONCLUSION

From the study concerning the pattern of land use, it is clear that agricultural land occupies the most dominant feature being located in the Khuga valley. It occupies 51.88% of the area. Built-up constitute 38.27% of the land use. Vegetation occurs in the western part of the area covering...
6.45% of the land cover. However, the field study reveals that the south eastern part of the area has gradual transformation in respect of land use. On the whole the following conclusion may be drawn:

1. The physical expansion of town built-up in the study area has been very rapid during the period 1974 - 2006.
2. The growth of population is mainly due to inter-district and intra-district migration.
3. Agriculture occupies the most important place in the area.
4. The emergence of new settlement or built-up areas in all direction and more concentration in the south eastern part of the study area has been a recent phenomenon.

In view of the above observation, it can be said that the area is in the process of transformation. The impact of growth of population and the physical expansion of land has induced the encroachment of the fertile agricultural land of the area. Thus, the process reduced the yield per hectare of agricultural production. In fact, town growth could be in any direction which is less fertile like the hilly terrain of the north-western part of the study area. It is therefore high time to prepare effective plan for balanced development of the entire area i.e., town and its periphery. It needs to be emphasized that physical expansion has to be in less fertile terrain where production is minimum.

REFERENCE:


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