CHAPTER III

CHANGING LAND USE IN THE AREA

The rapid expansion of the area under non-agricultural land uses has been one of the major impacts of urbanisation. The landscape of the region a century ago was dominated by small villages with tiny paddy fields. The ghat region was thickly forested and inhabited by tribals. In the coastal area were small fishing hamlets and extensive areas were covered by salt pans and marsh. The development of Bombay in the latter part of the nineteenth century and the construction of roads and railways, followed by the growth of industries and towns, led to the gradual transformation of the area, with residential, industrial and commercial activities occupying extensive areas of hitherto agricultural land. Though the land actually occupied by urban uses adds up to only a small part of the total area, it holds the vast majority of people, dwellings and places of work, thus making even a small conversion of land into non-agricultural uses significant.

The study of transfers of land in the present analysis, coincides clearly with the normally accepted definition of urban development. The figures cover losses to residential areas, buildings of all types, industries, schools, recreational and other open spaces, roads and railways and even reservoirs. It should also be understood that there is often a time-lag in some of the recorded conversions. In some cases, development may not
occur immediately, especially if the land is held for speculative purposes. Again, the areas of the towns and villages vary through the decades. Town limits have often been extended with the passage of time. At times part of a village has been included in the metropolitan area of a town. In such cases, since it has not been possible to discern precisely in which part of the village the change took place, fifty percent of all changes have been included for the village and fifty percent included for the town.

**REGIONAL PATTERN OF CHANGE OF LAND USE IN THE AXIAL REGION**

In order to gain a clearer perspective the change in land use from agriculture to non-agricultural uses was analysed from the beginning of the twentieth century. Before evaluating the varying shifts in land use of individual settlements in the region an overall view of the tehsil-wise transfer of farm land into urban uses was studied. Because the tehsils vary considerably in size, the losses for different tehsils is not comparable. In order to allow for such comparisons it was necessary to convert the acres into percentages of the total tehsil areas. Hence the percentage figures relate to the average proportion of the tehsil areas converted from agricultural to urban use during the selected ten years periods. Moreover in order to remove the distortion introduced by variation in the regional rates of transfer when making comparisons in the sequence of decennial time periods, the data has been converted into index numbers (Table III : 1).

The magnitude of urban growth as indicated by the "agri-urban conversion index" (Best R.H. and Champion A.C., 1970) reveals wide fluctuations in the rate of change of land use during the course of the century. With each decade, there is
### Table III: 1

**Actual Total area under converted (A) from agricultural to non agricultural uses, conversion rate percentage (C.R) and Conversion index (Tahsil wise)**

<table>
<thead>
<tr>
<th>Tahsil</th>
<th>Before 1900</th>
<th>1901 - 10</th>
<th>1911 - 20</th>
<th>1921 - 30</th>
<th>1931 - 40</th>
<th>1941 - 50</th>
<th>1951 - 60</th>
<th>1961 - 70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thana</td>
<td>17.76</td>
<td>0.02</td>
<td>3333</td>
<td>17.11</td>
<td>0.02</td>
<td>400</td>
<td>24.95</td>
<td>0.03</td>
</tr>
<tr>
<td>Fariyan</td>
<td>2.4</td>
<td>0.001</td>
<td>16.7</td>
<td>19.06</td>
<td>0.02</td>
<td>400</td>
<td>66.3</td>
<td>0.09</td>
</tr>
<tr>
<td>Ulhasnagar</td>
<td>0.2</td>
<td>0.0002</td>
<td>3.3</td>
<td>0.29</td>
<td>0.003</td>
<td>6</td>
<td>1.68</td>
<td>0.003</td>
</tr>
<tr>
<td>Shindavi</td>
<td>0.8</td>
<td>0.0005</td>
<td>8.3</td>
<td>0</td>
<td>0</td>
<td>17.48</td>
<td>0.01</td>
<td>14.3</td>
</tr>
<tr>
<td>Russa</td>
<td>0.73</td>
<td>0.0005</td>
<td>8.3</td>
<td>4.47</td>
<td>0.003</td>
<td>60</td>
<td>1.75</td>
<td>0.007</td>
</tr>
<tr>
<td>Panvel</td>
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<td>0.00007</td>
<td>1.2</td>
<td>1.08</td>
<td>0.0007</td>
<td>14</td>
<td>2.59</td>
<td>0.002</td>
</tr>
<tr>
<td>Uran</td>
<td>10.29</td>
<td>0.02</td>
<td>333.3</td>
<td>3.8</td>
<td>0.008</td>
<td>160</td>
<td>8.3</td>
<td>0.02</td>
</tr>
<tr>
<td>Karjat</td>
<td>1.49</td>
<td>0.001</td>
<td>16.7</td>
<td>3.07</td>
<td>0.002</td>
<td>40</td>
<td>12.28</td>
<td>0.009</td>
</tr>
<tr>
<td>Nalasapur</td>
<td>1.66</td>
<td>0.002</td>
<td>33.3</td>
<td>0.29</td>
<td>0.003</td>
<td>4</td>
<td>6.11</td>
<td>0.003</td>
</tr>
<tr>
<td>Maveli</td>
<td>24.53</td>
<td>0.02</td>
<td>333.3</td>
<td>20.74</td>
<td>0.005</td>
<td>120</td>
<td>929.13</td>
<td>0.33</td>
</tr>
<tr>
<td>Hawe</td>
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<td>0.00008</td>
<td>1.3</td>
<td>17.50</td>
<td>0.005</td>
<td>100</td>
<td>45.27</td>
<td>0.009</td>
</tr>
</tbody>
</table>

*Source: Village form No II from the respective Tahsil offices in the area.*
Agri-Urban Conversion Index for some Tehsils in the Bombay-Poona Axial Region, 1900-1971.

Fig. 3:1
observed an acceleration in the rate of conversion, suggesting thereby the increasing dynamism in the pace of urban development. However, the decade of greatest change is not in 1961-71 as expected, but in the year 1921-30, at a time when the cities of the intermodal region were not growing at a rapid pace but were stagnating. This unusual pace of growth during 1921-30 was because large areas of land were bought by the Tata Hydroelectric Company in Parat, Khalapur and Maval tehsils for the hydroelectric project. These conversions, therefore, unlike most transfers in later years occurred in the rural rather than in the urban areas. In addition this change in land use was oriented to the larger interests of the urban community rather than to the immediate requirement of the existing villages. These large scale transfers of land resulted in the reversal of talukas recording the highest agriculture to urban displacements in the region during the decades 1921-30 and 1931-40 (Fig 3 : 1). Prior to, and following these decades, it is the tehsils in Thana district, immediately surrounding Greater Bombay, that lead in the percentage of conversions that are occurring. However, this general pattern registered some changes between 1961-70. Though the land conversion indices for Thana, Ulhasnagar and Kalyan tehsils still remain the highest for the region, for the first time tehsils in other districts have an agri-urban conversion index which is higher than the regional average. It is also significant that Thana and Ulhasnagar are the only tehsils in the region where the actual conversion rates have fallen during the same period. Urban growth is thus becoming more widespread
CHANGE IN LANDUSE IN THE
BOMBAY-POONA AXIAL REGION
(Before 1900)

Percent

- No change
- 0 - 0.05
- 0.05 - 0.10
- 0.10 - 0.50
- 0.50 - 1.00
- 1.00 - 5.00
- Over 5.00

Fig. 3:2
Change in land use in the Bombay-Poona axial region (1911-20)

Percent

- No change
- 0 - 0.05
- 0.05 - 0.10
- 0.10 - 0.50
- 0.50 - 1.00
- 1.00 - 5.00
- Over 5.00

Fig. 3.4
Fig. 3-5

CHANGE IN LAND USE IN THE BOMBAY-POONA AXIAL REGION (1921-30)

Percent

- No change
- 0.05 - 0.10
- 0.10 - 0.50
- 0.50 - 1.00
- 1.00 - 5.00
- Over 5.00

Legend:
- Village Boundary
- Tehsil
- District

Legend:
1. Bassein Tehsil
2. Thana
3. Bhiwandi
4. Kalyan
5. Ulhasnagar
6. Uran
7. Panvel
8. Khalapur
9. Karjat
10. Maval
11. Haveli

Legend:
- Village Boundary
- Tehsil
- District

Fig. 3:5
in the tehsils of the Bombay-Poona region, but more specifically in Panvel, Khalapur and Haveli talukas.

**Temporal Variations and Spatial Perspectives of Change at Microlevels in the Region**

Though the broad generations made above provide an overview of change in land uses, they nonetheless carry the risk of masking certain revealing variations at the microscale. These have been brought into focus by analysing the change in the pattern of land use in four phases, each following distinct trends.

**First phase of development**

Before 1910 (fig 3 : 2 and 3 : 3) the spatial pattern of change was largely random occurring both in urban and rural settlements and was small in magnitude. In the following decade (1911 - 20), (fig 3 : 4) more or less the same random pattern of distribution persisted with some infilling at the already existing points of change.

**Second phase of development**

In the second phase of development beginning in the decade 1921-30 (fig 3 : 5), the trend of land use change for the first time evolves into a narrow ribbon like arterial pattern with gaps in between. This linear axial pattern apart from displaying within region differences, especially of intensity, continues upto the present time.

**Third phase of development**

After 1941, more pronounced, within region variations emerge, with intense polarisation at certain favoured points.
CHANGE IN LAND USE IN THE
BOMBAY-POONA AXIAL REGION
(1931-40)

Percent

No change
0 - 0.05
0.05 - 0.10
0.10 - 0.50
0.50 - 1.00
1.00 - 5.00
Over 5.00

Fig. 3:6
CHANGE IN LAND USE IN THE
BOMBAY-POONA AXIAL REGION
(1951-60)
Percent

- No change
- 0.05 - 0.10
- 0.10 - 0.50
- 0.50 - 1.00
- 1.00 - 5.00
- Over 5.00

Fig. 3:8
CHANGE IN LAND USE IN THE BOMBAY-POONA AXIAL REGION (1961-70)

Percent

- No change
- 0 - 0.05
- 0.05 - 0.10
- 0.10 - 0.50
- 0.50 - 1.00
- 1.00 - 5.00
- Over 5.00

Fig. 3:9
During 1941-50 (fig 3:7), the regions of major change in land use are concentrated in the Kalyan - Bhivandi - Thana triangle all in the vicinity of Bombay. Widespread though less intense change have occurred in Bassein tehsil. At this time the Poona region was yet to emerge as a node of significance and the pattern could best be described as unimodal.

**Fourth phase of development**

The fourth phase of development is marked by the emergence of Poona as a second node (fig 3:8). Intense development has been generated around the city, particularly at the Poona - Bombay and Poona - Sholapur roads. The growth around Bombay has become more intense and widespread. This phase is also marked by the growth of the intermediate region. Scattered pockets of high growth are found in centres where industries have dispersed in recent years. Except for the growth agglomeration around Bombay and Poona, growth in the axial region is still very localised, almost hugging the transport arteries. The present pattern of land use change in the region (fig 3:10) is bipolar with traces of localised changes in the intermediate region.

**Types of land use changes**

In order to analyse and compare the significance of the different activities competing for space in the region over a period of time the extent and nature of the land use changes for all the tehsils in the region was undertaken for the decades 1921-31 and 1961-71 (Table III:2). The different types of land use change have been aggregated under five major categories namely residential, industrial, commercial, public utility and other non-agricultural uses. Except for public utility, all the
% OF LAND UNDER NON-AGRICULTURAL USES IN THE BOMBAY-POONA AXIAL REGION (1951-60)

Percent

- No
- 0 - 0.10 N.A.
- 0.10 - 1.00 N.A.
- 1.00 - 5.00 N.A.
- 5.00 - 10.00 N.A.
- > 10.00 N.A.

Fig. 3:10
% OF LAND UNDER NON-AGRICULTURAL USES IN THE BOMBAY-POONA AXIAL REGION (1961-70)

Percent

- Completely agri.
- 0 - 0.10 N.A.
- 0.10 - 1.00 N.A.
- 1.00 - 5.00 N.A.
- 5.00 - 10.00 N.A.
- >10.00 N.A.

Fig. 3:11
### Table 3.1.2
Types of Land use changes in the Tehsils of the Region during 1921-30 and 1961-70

<p>| Changes in Land Use from Agriculture to Non Agriculture (in acres) |</p>
<table>
<thead>
<tr>
<th>Thana</th>
<th>Nalyan</th>
<th>Ulhasnagar</th>
<th>Givandli</th>
<th>Vasai</th>
<th>Panvel</th>
<th>Uran</th>
<th>Karjat</th>
<th>Malapur</th>
<th>Nave</th>
<th>Navali</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ 72,41</td>
<td>53,57</td>
<td>37,52</td>
<td>83,48</td>
<td>78,3</td>
<td>5,47</td>
<td>45,8</td>
<td>4,14</td>
<td>8,95</td>
<td>0,4</td>
<td>4,93</td>
<td>3,17</td>
</tr>
<tr>
<td>21,6</td>
<td>54,71</td>
<td>36,3</td>
<td>68,9</td>
<td>41,32</td>
<td>85,31</td>
<td>11,39</td>
<td>87,91</td>
<td>9,66</td>
<td>39,74</td>
<td>29,68</td>
<td>41,92</td>
</tr>
<tr>
<td>Industrial 1921-31</td>
<td>2-31-54-0</td>
<td>82-27-14-11</td>
<td>54-10-6-0</td>
<td>2-33-46-0</td>
<td>1-3-2-2</td>
<td>0-22-8-5</td>
<td>60-33-30-0</td>
<td>2-0-20-0-0</td>
<td>1-0-7-0-0</td>
<td>14-5-0-0</td>
<td>226-23-43-6</td>
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<tr>
<td>4,97</td>
<td>44,32</td>
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<td>1,87</td>
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<td>4</td>
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<tr>
<td>72,68</td>
<td>41,5</td>
<td>61,00</td>
<td>24,67</td>
<td>41,82</td>
<td>12,45</td>
<td>66,02</td>
<td>13,24</td>
<td>89,32</td>
<td>46,15</td>
<td>63,05</td>
<td>52,96</td>
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<td>Commercial 1921-31</td>
<td>0-10-34-0</td>
<td>2-26-43-10</td>
<td>-</td>
<td>0-5-22-10</td>
<td>0-3-36-2</td>
<td>0-38-1-10</td>
<td>0-15-45-0</td>
<td>0-21-30-0</td>
<td>0-24-30-0</td>
<td>0-1-0-0</td>
<td>-</td>
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<tr>
<td>0</td>
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<td>15,68</td>
<td>0,5</td>
<td>0,30</td>
<td>0,13</td>
<td>0,29</td>
<td>0</td>
<td>0,1</td>
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<td></td>
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<tr>
<td>1961-71</td>
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<td>27-10-57-1</td>
<td>4-10-24-0</td>
<td>37-29-12-5</td>
<td>34-12-12-0</td>
<td>9-30-0-0</td>
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<td>5-15-0-0</td>
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<td>4-1-11-0</td>
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<td>0,5</td>
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<td>0,19</td>
<td>2,19</td>
<td>0,76</td>
<td>0,9</td>
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<td>0-14-25-0</td>
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<td>-</td>
<td>0</td>
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<td>-</td>
<td>0,6</td>
<td>0,09</td>
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<td>2,38</td>
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<td>0,80</td>
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<td>7,31</td>
<td>0,74</td>
<td>0,7</td>
<td></td>
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</table>

* AREA IN ACRES, GUNJAS, ANNAS AND PARTI-ANNAS,
+ % OF TOTAL CONVERTED AREA.
other types of land use have shown an increase exceeding ten times the average converted during 1921-31.

**Residential land use**

Residences occupy a major proportion of the emerging non-agricultural land use in recent years. The urban economy has always differed from agriculture in the proportion of space allocated to residential occupancy on the one hand and economically productive functions on the other. In farming regions dwellings occupy an almost negligible fraction of the space given to agricultural production. Though the proportion of the area converted into residential uses appears negligible during 1921-30, the facts have been distorted due to the large acreage occupied by the Tata Power Transmission Company in Maval, Karjat, Khalapur and Panvel tehsils. In the tehsils surrounding Greater Bombay namely Thana, Kalyan, Bassein and Bhivandi, residences account for over 70 percent of the land use changes, reflecting that residences are the first to move out of the city when urban sprawl takes place. During the later decade, the proportion of land occupied by residences has considerably increased in all the tehsils in the region. The maximum growth has occurred in Kalyan, Panvel and Havell tehsils, in the vicinity of the new industrial developments. The major change in Kalyan tehsil has taken place in the two dormitory suburbs, Kalyan and Dombivili which are located between the industrial suburbs at Thana and Ulhasnagar, Ambernath. In Panvel, residential growth has been an outcome of new developments which are focussed near this tehsil. The construction of the Thana creek bridge has resulted in bringing the area closer to Greater Bombay which is the centre
of economic activity in the region. Besides, the development of New Bombay, the Taloja industrial estate and the Hindustan Organic Chemical factory at Rasayani have given a spurt to the development of this tehsil. However, the author has not observed such extensive residential developments on the field, and it may be inferred that much of the land has been held for speculative purposes. The residential expansion in Haveli is again directly related to the growth of employment potential in the region generated by the industrial development at Pimpri - Chinchwad.

**Industrial land use**

Industries today, occupy the maximum acreage under non-agricultural uses. During the early twentieth century industrial growth was limited mainly to the area around Kalyan, which was an important railway junction. Ambernath, another suburban railway station was planned as an industrial suburb and the major industrial growth was focussed at this centre. The industries at these locations were modern large scale units and hence occupied very extensive areas. The industries which developed at the other centres during this period were essentially agro-based industries occupying a limited acreage, for example the rice mills at Panvel or the oil-crushing mills at Bassein. The other types of industries were those involved with the processing of primary products like the stone quarries which came up in large numbers in Haveli tehsil in response to building activities in Poona city. In the same category are the salt pans which were developed at Uran tehsil and occupied very large areas, thereby projecting a misleading image of the tehsil being highly industrialised.
The area occupied by industrial uses has considerably increased with the dispersal of industries from Greater Bombay and except for Karjat and Maval tahsils, the other parts of the axial region have large acreages under industrial use. Such extensive areas under industrial use may be partially due the large size of an average industrial holding. Due to the progress in technology, the method of industrial production underwent a change from batch to the assembly line process which favours an extensive horizontal development of the firm. In addition, most factories in the region possess land in excess of their requirement. Industries, especially those moving out of Bombay, naturally purchase large areas to meet long term needs of expansion, resulting in a considerable proportion of the area purchased remaining undeveloped. According to the survey carried out by the statistical branch of Regional Planning Office and field surveys by the author, the plot coverage for the purpose of plant, storage/godown and canteen is found to be on an average hardly 12 percent of the total occupied area. In Pimpri and Chinchwad, where the largest industrial growth has taken place the built up area is only 6 percent of the occupied area. The growth in the area under industrial use in recent years is an outcome of the increasing number of industrial units as well as the large average size of an industrial holding.

Commercial land use

The land under commercial activities is negligible accounting for as little as 0.1 percent of the total land use change in 1921-30 and 3.64 percent during the later decade (1961-70). The low level of economic development
and consequently the even lower purchasing power of the population has limited the potential for the growth and diffusion of consumer oriented trade especially during the earlier decade. During this period only Bassein tehsil showed a considerable growth of commercial establishments on account of the huge profits earned by the marketing of horticultural produce to Bombay. Along the tehsils straddling the Bombay - Poona road the growth of commercial activity was mainly due to the growth of hay godowns. Trade in hay flourished at this time to cater to the heavy traffic of bullock carts plying between Bombay and the interior through the Bhor Ghat. In 1961-71 the acreage under commercial uses has increased, particularly in the tehsils adjoining Greater Bombay i.e. in Thana, Kalyan, Bassein and Bhivandi tehsils as also Naveli tehsil, showing thereby a positive response to industrial - urban growth.

However, the limited extent of the commercial acreage even in these areas may also be attributed to the proximity of Bombay and Poona. To the suburban population, used to commuting, the better variety of services available in the focal cities justify a trip for their shopping needs, thereby, hampering the growth of commercial establishments at their places of residence. The low acreage under commercial use is also due to the multifunctional character of many establishments. Often the same building is used as a residence and a shop. In such cases half the area has been considered under residences and half for commercial uses.
Public Utility.

Public utilities include two major types of land use. One includes the development of the basic infrastructure of the region and the second includes those services providing civic amenities to the population. During 1921-31 the majority of land use changes in this category were of the former type and were associated essentially with the occupation of extensive areas by Tata Hydroelectric Company for power generation and transmission. In Haveli tehsil a large acreage was occupied by the wireless station at Dighi. In recent years much of the land use changes for public utility has been to provide the resident population with civic amenities and services. It has been observed that the area converted for public utility instead of increasing with growing population has decreased drastically during 1961-71. This is despite the increase of the role of planning in the development of cities and the guidelines adopted by the committee on plan projects advocating that about fifty percent of the developed area excluding industries be reserved for civic amenities and open spaces. The majority of the conversions are for schools. Other amenities are poorly developed or are lacking in most of the newly developed industrial complexes. For example, even though more that 40,000 workers are employed in Thana-Kolshet, Trans-Thanal Kalyan, Ulhasnagar, Dombivili, Ambernath Industrial areas, and contributions under the Employment Service Insurance Scheme are regularly recovered from the industries, there is not a single Employment Service Insurance Scheme hospital in any of these areas (Bombay Metropolitan Regional Planning Board, 1969).
One of the reasons for the lack of civic amenities and other basic infrastructure, including roads has been because almost all the new industrial development in the vicinity of Bombay occurred outside the jurisdiction of the Municipalities. The same is true of Pimpri-Chinchwad an industrial suburb of Poona where it was only in the mid-seventies that a new civic authority was constituted by the Government. The new industrial complexes stretched into areas of several adjoining Grampanchayats and though provisions do exist, integrated development action by the several Gram-Panchayats together has never been possible. The level of administrative talent available at the Grampanchayat level is not sufficiently mature to grasp and comprehend the new kinds of problems that are created by the sudden spur in the developmental activities in their areas, nor is the level of resources available with these panchayats sufficient to meet the needs adequately. It is therefore imperative to include all the areas where new industrial developments have taken place in the areas of adjacent Municipal authorities or to form separate Municipal Councils for these areas as in the case of the Pimpri-Chinchwad complex.

Other Non-Agricultural activities.

In the study this category includes mainly cattle sheds and poultry farms. Though these occupations are still primary in nature they have been included due to the commercialised nature of the undertaking which varies considerably from the traditional pattern of agriculture existing in the region. In keeping with the times and the opportunities of their location, the farmer supplies milk
and eggs to the urbanised parts of the neighbourhood.
During 1921-31, when the region was essentially uninodal
and over 80 percent of the urban population was concentra-
ted in Bombay, the majority of the cattle sheds were
concentrated in Thana tehsil. With the dispersal of
population a few more commercialised farms have been
established particularly in Maval tehsil where apart from
proximity to the market, the unproductive nature of the
terrain has resulted in the large number of poultry farms which
have mushroomed here in recent years.

Finally, the types of landuse changes in the region
reflects the nature of growth, as also the level of economic
development in the study area. From Table III : 2 it is
evident that the two dominant categories of land use are
residential and industrial which account for over 94 percent
of the area involved in the transformation from agricultural
to non-agricultural uses especially during the decade 1961-70.
In contrast, for the earlier decade (1921-30) both these
categories hardly represent 5 percent of the total area
converted for non-agricultural purposes, which as mentioned
earlier, was due to the large acreage occupied by the Tata
Hydroelectric Company for public utilities. Though industry
and residence are both significant in the total proportion
of area utilized, the share of land converted for residential
purposes was much greater in the earlier decade (1921-30)
especially in the vicinity of Bombay. At this time the share
of industries in the region was infinitesimally small
everywhere except at Kalyan and Ulhasnagar. By the decade
(1961-71) industry had surpassed all other land use categories
including residential, and it emerged as the dominant factor in bringing about the greatest change in the pattern of land use. This trend is getting further accentuated in recent years and it is likely that the significance of industrial land use will further increase in proportion to the residential acreage.

Unlike the residential and industrial uses which directly reflect the tempo and growth of urbanisation and industrialisation the other three categories Commerce, Public Utility and Other Non-Agricultural uses, show a consistently low percentage of land converted in all the tehsils, except perhaps for public utilities in the decade 1921-30, which shows very high percentages in the tehsils away from Bombay. Thus these land use categories become inconsequential and do not depict the urban industrial development in the region.

**LAND USE CHANGE AND POPULATION INCREASE**

Table III: 3 records the land use change, population increase and the index of urbanisation in the tehsils of the region. The correlation coefficient between land use change and population increase is 0.56 and with the degree of urbanisation of a tehsil it is 0.548. Though both these coefficients are significant the coefficients of determination are only 31
### Table III:3  
Tehsil-wise change in land use, growth rate of population and the index of urbanisation, 1961-70

<table>
<thead>
<tr>
<th>Tehsil</th>
<th>% change in land use</th>
<th>Percentage growth rate of population</th>
<th>Index of urbanisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thana</td>
<td>1.20</td>
<td>78.12</td>
<td>65.62</td>
</tr>
<tr>
<td>Mahyjan</td>
<td>1.20</td>
<td>55.44</td>
<td>62.55</td>
</tr>
<tr>
<td>Ulhasnagar</td>
<td>0.63</td>
<td>51.13</td>
<td>82.86</td>
</tr>
<tr>
<td>Bhiwandi</td>
<td>0.39</td>
<td>51.21</td>
<td>35.91</td>
</tr>
<tr>
<td>Bassein</td>
<td>0.21</td>
<td>29.30</td>
<td>27.04</td>
</tr>
<tr>
<td>Marjat</td>
<td>0.04</td>
<td>26.16</td>
<td>15.53</td>
</tr>
<tr>
<td>Panvel</td>
<td>0.61</td>
<td>28.58</td>
<td>19.29</td>
</tr>
<tr>
<td>Nhalapur</td>
<td>0.50</td>
<td>35.27</td>
<td>25.14</td>
</tr>
<tr>
<td>Uran</td>
<td>0.29</td>
<td>35.54</td>
<td>17.68</td>
</tr>
<tr>
<td>Maval</td>
<td>0.06</td>
<td>29.92</td>
<td>29.08</td>
</tr>
<tr>
<td>Naveli</td>
<td>0.43</td>
<td>50.97</td>
<td>83.08</td>
</tr>
</tbody>
</table>

Percent and 30 percent respectively. The absence of a strong correlation is not too difficult to explain for in the region the natural growth of population and immigration are by no means the sole generators of areal gains for non-agricultural purposes especially since new residential development accounts

*Figures for growth rate of population and the index of urbanisation have been calculated from Census of India (1971), General Population Tables, Series II, Maharashtra Part II-A, Directorate of Census Operations, Maharashtra.*
results in the availability of ample accommodation for the immigrants in the village. This pattern is clearly visible in the case of Khotpoli, a newly developed urban centre. The increase in employment potential has been accompanied by an increase of population in the surrounding villages (fig 5 : 11) but is marked by the absence of any displacement of agricultural land into non-agricultural uses (fig 3 : 9). A considerable time lag exists between the growth of population and the change in the pattern of land use except where residential accommodation is provided by the industrial units.

LAND USE CHANGE AND REGIONAL PLANNING

Most of the development models in our country which have been prepared by the planning authorities are based on past and projected population trends. As seen in the study the correlation between change in land use and population or urban growth is not very strong. Hence using figures of population growth as indicators of alteration in land use for land zoning can be quite misleading and is probably responsible for the irrational goals formulated in most of our development projects. Strategic plan additions to a region's infrastructure can be added to a known developed acreage, and compared both with population projections and projections of land use changes. The use of these two parameters together should help to evolve more realistic operational planning strategies.
for only 41.9 percent of all new lands converted for non agricultural purposes.

Again, in certain towns there are indications of tightening up of space provisions within some sections of the existing urban areas. In the residential areas adjoining Thana station the sites of older houses with extensive grounds are often being developed to accommodate multistoreyed buildings, and thus many more people at higher density without adding to the present stock of urban land or using up any farmland in the process. In this context the evidence adduced by Colin Clark (1967) may be recalled which postulates that space provisions in predominantly residential areas are converging towards a 'pivotal' density, with higher density areas losing population and lower density areas gaining it.

Another major factor which is pertinent in most developing countries, is that the spread of growth impulses from the urban centres is very superficial in nature. The growth of population in the villages around an important urban-industrial complex is rarely accompanied by any transformation in the land use pattern, in the villages themselves as most of the in-migrants are accommodated within the limits of the old gaothan*. This is possible because with increasing social security there is a strong tendency among the farmers to reside near their fields rather than at the village core. This

* gaothan refers to the built up area of the village.
REFERENCES


5. Clark, C., "Population Growth and Land use" (1967)


