CHAPTER - IV

DELINEATION OF RURAL URBAN FRINGE

4.1 INTRODUCTION

Rural urban fringe is a unique landscape comprising of a particular mix of land uses and socio-economic activities made by a collection of processes that have impacted on the fringe in a specific way. The degree of relationship between the city and its surrounding area varies from city to city depending upon the functions which the city performs based on the physical and socio-cultural factors. With the result some urban centers are strongly interrelated with their surrounding areas, while some have poor relations, depending upon the degree of interaction. Urban geographers have given different names to surrounding area of a city for example, Umland (Sing, R. I. 1957), Urban Hinterland (Green, H. C. 1955), Metropolitan region (Alam and Khan 1972), Sphere of influence (Mahadavan and Jaya Shanker 1950), Urban Field (Singh, M. 1964) etc.

leads to spread out of population in the surrounding areas of city and not also leads to spatial extension of city limits but also causes the changes in the limits of fringe area. The criteria for the delineation of rural urban fringe vary from region to region. Different urban geographers have demarcated the rural urban fringe by employing different indicators for the delineation of rural urban fringe. The criteria for the selection of variables for demarcation of rural urban fringe mostly depends upon the functional linkage of the city with its surrounding area and secondly on the availability of data of selected variables. The indicators used for delineation of rural urban fringe not only vary from developed to developing nations but also vary from city to city of the same country. It is clear from earlier studies such as Walter Fierly (1946), Mayer and Beegle (1947), Green (1950), Singh (1955), Balk (1957), Pryor (1968), Golledge (1960), Ellefson (1962), Dikshit and Swanti (1968), Alam and Khan (1972), Hudson in (1973), Sita and Padki (1985), Arun Das S. (1997) that there are certain common factors which have been emphasized as meaningful indicator of the urban influence on the surrounding area of the city. It is advisable to analyze the application in the present study.

- Milk Supply;
- Vegetable and Fruit Supply;
- News Paper Circulation;
- Transport Service;
- Daily Commuting;
- Medical Service;
- Educational Service
- Ratio of Non-Agricultural Workers;
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- Population Growth;
- Population Density;
- Literacy Rate;
- Sex Ratio;
- Land Value;
- Household Density and
- Distance Gradient.

Altogether fifteen variables have been taken into account for the fringe demarcation but after examining the applicability of these variables the researcher have divided them into two categories:

- Neglected variables and
- Variables for delineation of fringe.

4.2 Neglected Variables

Though there are certain variables which have been used by different geographers for the delineation of rural urban fringe but the applicability of those variables for the present study is not up to the mark. As practically they are unsuitable and misleading for the delineation of the fringe for the present study.

4.2.1 Milk Supply

It is one of the important factors which determine the relationship between the city and its surrounding area. As the milk is the most perishable commodity and is supplied daily to the market, therefore distance plays an important role in determining the milk supply zone of city. However due to the availability of modern transport, the supply of milk in the present study exceeds beyond 40 kilometers. The data collected from
Chemishaha Co-operative Federation and other sources reveals that more than 60 percent of milk supply comes from the distance of 20 to 50 kilometers (excluding the supply which comes from out of the state). Therefore this variable has been neglected for the delineation of rural urban fringe.

4.2.2 Vegetable and Fruit Supply

It is also considered as an important factor for the delineation of fringe. Vegetables and fruit supply also resembles the interrelationship between an urban center and its surrounding areas as the city rely on its countryside to fulfill the requirements of vegetable and fruit supply. Srinagar city having an area of 300 square kilometers, out of which 45 percent is under agriculture. Though the data required for the delineation of fringe using vegetable and fruit supply is not available on official records regarding the area supplying vegetables and fruits. However, the data collected from Fruit Mandi and from other sources have shown that nearly 50 percent of the domestic supplies are being made by the city itself, 25 percent of are met by surrounding villages falling within the radius of 15 to 20 kilometers and remaining 25 percent of supplies come from the villages falling outside the radius of 20 kilometers. Therefore this variable is not suitable for the delineation of rural urban fringe.

4.2.3 News Paper Circulation

In general the circulation of newspaper from the city in its surrounding area directly depends upon the accessibility and Srinagar city has no exception with it. The data regarding the circulation of newspapers has been collected from main publishers like as Greater Kashmir, Kashmir Uzma, Srinagar Times, Aftab, Itlaat, Alsafa, and Rising Kashmir. The data revealed that more than 50 percent cent newspapers are being
distributed in within the Srinagar city. Secondly the main towns of the valley Anantnag and Baramulla (situated more than 50 kilometers from the Srinagar city) shown up high frequency of newspaper circulation than those of the villages surrounding the Srinagar city. Therefore the variable has neglected for the delineation of rural urban fringe.

4.2.4 Transport Service

Transport is one of the most important factors that shapes and reshapes the city and its surrounding area. It bridges the gap between the urban and rural societies. Among various means of transportation, road transport plays an important role in the linkage between the two societies. The transportation service in the Kashmir valley is mostly run by private sector in the form of buses, mini buses, and sumo service. The researcher has collected some data from private operators regarding the frequency of different modes of transport to different routes radiating from Srinagar city. Unfortunately the detailed information regarding the traffic flow is not available and is based on rough estimation. For that reason the indicator has been neglected for the delineation of rural urban fringe.

4.2.5 Daily Commuting

Daily commuting is another factor which has been neglected for the delineation of rural urban fringe. Though the construction and development activities have greatly led to the expansion of the city with the result there is growing demand for large number of labor force in the Srinagar city. This labor force is not only met within the city but also from outside the city. The flow of domestic labor force in the Srinagar city mostly comes from the distant and remote areas of the valley mainly due to lack of employment opportunities. There is no official recorded data regarding the commuting of labor to Srinagar city. However the researcher has consulted the driver of buses and mini buses of
different routes to conform the flow of commuters to the city. However it has been found that the main areas of labor force to the city were belongs to the villages of Budgam, Chadora, Pulwama, and Ganderbal tehsils but due to the development and availability of all kinds of means of transportation mainly due to the availability of train service from north to south of the valley (from Baramulla to Anantnag) a bulk of labor force also commute from the villages belonging to the tehsils of Anantnag (58 Km), Baramulla (56 Km), Kulgam (69 Km), Bijbehara (46 Km), Bandipora (54 Km).

4.2.6 Medical Service

The availability of medical service also determines the urban influence on rural areas or interaction between urban Centers with peripheral area. Srinagar city exhibits the primacy also in the availability of medical facilities. All the hospitals in the Srinagar city are well equipped with qualified staff and modern tools and equipment of medical and surgical service. No doubt a good number of basic healthcare centers are located in the peripheral area of Srinagar city but a considerable majority of people avail the medical service in the city mainly due to two reasons. Firstly due to the availability of inadequate of medical facilities and secondly due to the majority of these health centers provide only basic health facilities. Therefore people of the faraway places prefer to go to Srinagar city for better and specialized health centers. The data revealed that the movement of patients to the Srinagar city even up to the distance beyond 70 kilometers. But the movement of the majority of the patients is up to the distance of 60 kilometers mainly from the areas of Anantnag, Baramulla, Sopore, Bijbehara, Bandipora, Charisharief, and Shopian. Therefore is not suitable for the delineation of rural urban fringe.
4.2.7 Educational Service

Education service is an important social function factor of a city which not only caters the needs of city dwellers but also the people of its environment. It is an important indicator which can be regarded as an index of urban influence. Though the number of educational institutions has increased in number in the surrounding area of the city but the influence of city is still uncontested mainly because of two reasons. Firstly due to its centrality in the availability of higher and specialized education and secondly due to the inadequate infrastructure facilities and non-availability of advanced specialized subjects. The data collected regarding the number of students from different places admitted to the city colleges of the year 2010-2011. It has shown that more than 50 percent of the students are from Srinagar. No doubt that majority of students are from main city and neighboring villages but a bulk of students are also coming from far distant towns and villages of Anantnag, Kupwara, Baramulla, Pulwama. Therefore is not suitable for the delineation of rural urban fringe.

4.3 Variables for Delineation of Fringe

The above mentioned indicators reveal that Srinagar city enjoys a wide range of interaction not only with its surrounding area but also highly with the whole region. However the interaction aspects have not been considered applicable for the delineation of rural urban fringe. These indicators not only cover long distance and having vast areal extent but also reflect the weak relationship with its surrounding area and thus do not possess any significant importance in the present study. Therefore only those indicators/variables have been selected for the delineation of rural urban fringe which
reflects not only a strong relationship but also reflects the dual characteristics. Those variables are:

- Ratio of Non-Agricultural Workers
- Population Growth
- Population Density
- Literacy Rate
- Sex Ratio
- Land Value
- Household Density
- Distance Gradient

4.3.1 Ratio of Non-Agricultural Workers

It is one of the most important variables which have shown a marked change in the surrounding villages of a city due to the impact of city. A city acts as a functional center, providing the employment not only to the residents of the city but also to those who reside in its vicinity. As a city grows the demand for service increases, with the result the people reside in the surrounding area of city found increasing employment opportunities other than the agricultural sector. So the proportion of workers in agricultural sector starts to decrease. Another reason is that rural population migrate into the city in search of employment due to lack of cheap residence, they are bound to get settled in the vicinity of city. It also helps in measuring the zone of urban influence on the working force ratio of fringe area. It includes the workers engaged in household industry, manufacturing industry, construction trade and commerce, transport, storage, communication and other services. The average rural and urban average has stood at
31.63 percent and 80.73 percent for the year 1981 and for the year 2001 it erected at 45.6 percent and 95.67 percent. In the study area in 1981, 2.69 percent of settlements have crossed the urban limit, 57.21 percent of settlements fall within the medium average (between urban limit and rural limit) and 40.10 percent of villages have recorded the average lower than rural limit in the year, while as in 2001, 5.10 percent of settlements have crossed the urban limit, 56.07 percent of settlements fall within the medium average (between urban limit and rural limit) and 38.83 percent of villages have recorded the average lower than rural limit.
SRINAGAR CITY
DELINEATION OF RURAL URBAN FRINGE
RATIO OF NON-AGRICULTURAL WORKERS - 2001

INDEX

- Below 45.60
- 45.61 - 95.67
- Above 95.68

Legend:
- Srinagar City
- Zabarwan Hills
- Satellite Towns

Map 4.2
4.3.2 Population Growth

With the growth of urbanization, rural areas are consistently being engulfed into urban landscape, and villages in the immediate vicinity of the cities and towns acquiring eventually an urban character. The fringe area of Srinagar city has also experienced a high growth rate of population from 1981 to 2001. The average rural and urban limits of population growth from 1981 and 2001 are recorded at 55.82 percent and 74.38 percent respectively. The villages with the growth rate equal or more than urban average have considered delineating the inner boundary fringe out of the total settlements, 49.03 percent of villages fall in this range. Similarly the villages with the growth rate less than rural average are considered to demarcate the outer fringe boundary and account 26.94 percent of settlements as outer fringe. While as the villages with the average in between the rural and urban limits are considered to demarcate the rural urban fringe boundary accounting 24.03 percent of settlements.
SRINAGAR CITY
DELINEATION OF RURAL URBAN FRINGE
POPULATION GROWTH (1981 - 2001)

INDEX
- Below 55.82
- 55.83 - 74.38
- Above 74.39

Srinagar City
Zabarwan Hills
Satellite Towns

Map 4.3
4.3.3 Population Density

Due to the centripetal and centrifugal forces the expansion of urban residential area in the fringe area is the result of the increase in population within the city due to the immigration from the adjacent rural areas and various parts of countryside. Due to the high population density within the city, this leads to counter urbanization to the adjacent area of the city and results in the increase in the density of population. It is the strong demographic indicator for delineation of rural urban fringe. A town or a city attracts migrants from rural areas for employment, education etc. due to the high rent for residence in the city they prefer to stay in the near vicinity of the city. In other words we can say that the density of population decreases with the increase in distance from the city. The average rural population density in 1981 stood at 148.75 persons per square kilometers and average urban population density stood at 2064.97 persons per square kilometers and in 2001 rural and urban average raised to 184.6 persons per square kilometers and 2777.45 persons per square kilometers respectively. In the study area 0.49 percent and 1.94 percent of settlements have crossed the urban limit, 93.89 percent and 95.15 percent of settlements fall within the urban limit and rural limits and the villages with the population density lower than rural average accounted 5.62 percent and 2.91 percent settlements in 1981 and 2001 respectively.
4.3.4 Literacy Rate

Literacy is a powerful indicator of development and it reflects the level of modernization of people which enables them to utilize the resource base of an area more effectively. It is an important indicator to analyze the urban influence on fringe area. Naturally the villages in the vicinity of a city are having more literacy rate than their counterparts. The rural and urban average stood at 17.82 percent and 38.77 percent for the year 1981 and for 2001 it has increased to 27.22 percent and 41.94 percent respectively. That village accounting more than the general rural average and less than the urban average have been designed as those forming the fringe boundary. Out of total settlements 1.71 percent of villages have crossed the average urban literacy limit, 75.06 percent of villages have rated literacy rate lower than rural limit and remaining 23.23 percent of villages represent rural urban fringe boundary in 1981. While as in 2001, 27.43 percent of villages have crossed the average urban literacy limit, 26.46 percent of villages have recorded the literacy rate lower than rural limit and remaining 46.12 percent of villages represent rural urban fringe boundary.
SRINAGAR CITY
DELINERATION OF RURAL URBAN FRINGE
Literacy Rate - 1981

INDEX
- Below 17.62
- 17.63 - 38.77
- Above 38.76
- Srinagar City
- Zabarwan Hills
- Satellite Towns

Map 4.6
4.3.5 Sex Ratio

Sex ratio is determined by a large number of bio-socio-factors which include the differential death rate among the two sexes and sex selective migration of population. It has been observed that there is high degree of association between high sex ratio and socio-economic development, especially in those areas where sex selective migration is absent.

A town or a city always attracts the male migrants from rural areas, so the sex ratio of the urban area is less as compared to rural areas. Some poor male migrants who cannot afford accommodation in the main city due to high rent as a result they prefer to get settled in the fringe villages around the city. So the sex ratio of the fringe area is comparatively less as compared to pure rural areas.

In the demarcation of the rural urban fringe for the year 1981 the rural and urban average stood at 888 and at 841 females per thousand males while as in 2001 the rural and urban average limit reached to 925 and 835 females per thousand males. 22 percent of villages have registered lower sex ratio than urban limit, 21.52 percent of villages have recorded the sex ratio higher than the average of urban sex ratio and lower than the average of rural sex ratio establishing the fringe boundary of 1981. The remaining 56.48 percent of villages have recorded the sex ratio higher than average rural limit. Similarly in 2001, 11.17 percent of villages have registered lower sex ratio than urban limit, 27.18 percent of villages have recorded the sex ratio higher than the average of urban sex ratio and lower than the average of rural sex ratio establishing the fringe boundary of 2001. The remaining 61.65 percent of villages have recorded the sex ratio higher than average rural limit.
SRINAGAR CITY
DELINEATION OF RURAL URBAN FRINGE
SEX RATIO - 2001

INDEX
- Below 853
- 854 - 925
- Above 926
- Srinagar City
- Satellite Towns
- Zabarwan Hills

Map 4.9
4.3.6 Land Value

Urbanization as it shapes and reshapes the functional pattern not only of a city but also its surroundings. It also plays an important role in determining the value of land. Land values are subject to the demand and supply in an area and thus land can termed as market commodity. Due to high proportion of urban population growth in the city, the people started to move from congested area to the outskirts of the city which not only affects the land use of that area but also affects the land value which gets increased very greatly. For the demarcation of rural urban fringe, the average urban and rural values have been considered. The average rural and urban land value of the year 2010 was 0.63 lakhs and 1.21 lakhs per acre. 3.55 percent of settlement has registered higher land value higher than urban land value forming urban characteristic region, 25.53 percent of recorded the land value greater than rural average but less than urban average forming fringe boundary and the remaining 70.92 percent of settlements have recorded the land value less than rural average establishing rural fringe.
4.3.7 Household Density

Household density is an important component in the framework of sustainable development and not only influences the characters and design but also architecture and technical strategies around of buildings in and around the city. Household density is an important variable that is being affected by the nature of urbanization. The average rural and urban household density in 1981 stood at 21.19 and 307.57 households per square kilometers and in 2001 rural and urban average raised to 25.28 and 401.54 households per square kilometers respectively. In the study area 0.24 percent and 2.67 percent of households have crossed the urban limit, 94.87 percent and 95.87 percent of households fall within the urban limit and rural limits and the villages with the household density lower than rural average accounted 0.24 percent and 1.46 percent households in 1981 and 2001 respectively.
4.3.8 Distance Gradient

Distance is an important explanatory variable that affects the spatial structure and character of socio-economic and demographic characteristics of the region in variety of ways. It not only determines the centripetal force of a city but also determines the degree of interaction with the surrounding area. The characteristics of settlements in a city region vary in discrimination order (either increase or decrease) with the increasing distance from the city. The application of gradient analysis is limited mainly to the inter-city analysis Nangia, (1972), Singh, (1966) have calculated the density gradient for the Indian cities starting from the nodal point of the city to a distance of 5 miles. Keeping in view the study area has been divided into three zones with the radius of 10, 15 and 20 kilometers from the city center. The first circle comprises of 35 villages excluding city limits and constitutes 8.25 percent of settlements, 132 number of villages fall within second circle accounting for 31.13 percent of settlements. Third circle constitutes 257 villages accounting 60.61 percent of settlement.
SRINAGAR CITY
DELINEATION OF RURAL URBAN FRINGE
DISTANCE ZONES

INDEX
- City Center
- Zone 1
- Zone 2
- Zone 3
- Srinagar City
- Satellite Towns
- Zabarwan Hills

0 3 6 12 Kilometers

Map 4.13
4.4 Final Demarcation

In order to establish the per centum of individual village, the aggregate values of all variables of each village have been arranged in ascending order. The villages have been divided into four classes of urbanization less than 40 percent to the total score of the village are designated as typically rural, below 60 percent and above 40 percent of the score as rural fringe, less than 80 percent and above 60 percent as urban fringe and more than 80 percent of score are inner city fringe.

The analyses of data have shown that the settlements are acquiring the urban character. 0.24 percent of settlements have secure more than 25 points (out of 30) in 1981 and 38 points (out of 48) in 2001 indicating more than 80 percent of urbanization forming Inner City Fringe. 16.98 percent of settlements in 1981 have secure more than 16 points (60 %) and less than 24 points (80 %) while as in 2001, 39.86 percent of settlements have secure more than 29 points (60 %) but less than 38 points (80 %) of urbanization creating Urban Fringe.

In 1981, 76.89 percent of settlements have scored more than more than 13 points (40%) but less than 18 points (60%) while as in 2001, 56.60 percent of settlements have scored more than more than 19 points (40%) but less than 28 points (60%) of urbanization forming Rural Fringe.

5.90 percent and 3.30 percent of settlements have formed purely rural area securing up to less than 12 points in 1981 and less than 18 points in 2001 respectively indicating less than 40 percent of urbanization.
4.5 Rural Urban Fringe of 1981 and 2001

During the period 1981 and 2001 the fringe area has shown a movement towards South - East in the territory of District Budgam and Pulwama mainly along the National Highway NH1, in the North it has extended along Ganderbal route and in the North West along the Baramulla road.

The numbers of settlements in inner city fringe has remained same but in case of urban fringe the numbers of settlements have increased from 72 to 169 from 1981 to 2001. On the contrary to it the number of settlements in rural fringe and purely rural area is reverse to the above case, the number of settlements in rural fringe and purely rural area has decreased from 326 to 240 and from 25 to 14 respectively. It reflects the increase of linkage of city with its surrounding area which spreads the urban influence.