



Dynamics of Land Transformation in Peri-Urban Areas A Case of Jammu City

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ABSTRACT: India is one of the largest urban system having more than 12000 settlements, 7500 towns and cities and statistics shows that 5-6 million population is continuously being added to urban India almost every year. Haphazard development and explosive urban growth has led to the formation of mixed-use spaces between urban cores and rural spaces known as peri-urban areas. Lack of institutional framework and unplanned growth in these areas lead to the emergence of serious land-use problems such as loss of agricultural land, land speculations, haphazard physical development etc. It has also lead to the emergence of poor infrastructure facilities, underutilization of resources and environment degradation. So, it becomes highly significant to solve the problems faced by the peri-urban areas to ensure proper utilization of land and to achieve better quality of life. The city selected for the study is Jammu due to its geographical characteristics the city has developed a vast variety of fringe development with its own unique characteristic and issues related to it. So, the study will help me to understand the transition of spaces in various forms and give me an insight of various issues related to it.

Many planning initiatives in such a situation fail to tackle the problems related to haphazard urban growth. It is anticipated that there is a huge gap between the level of services, facilities and planned opportunities provided to cities versus these haphazardly growing areas. There is no efficient tool to monitor the development which is taking place in the peri-urban areas and to control its haphazard growth, the governing bodies of the peri-urban areas are often unequipped to control the development

The paper attempts to understand the process of structural and urban land use transformation as well as occupational structures and existing infrastructure in peri-urban Jammu. It also focuses on understanding the existing legal frame work and policies and to identify the loop-holes in the existing legal framework and suggest appropriate solutions for it.

Key words: Urbanization, Peri-urban areas, land-use transformation, structure and urban land-use, occupational structure, infrastructure.

I. INTRODUCTION

The state of Jammu and Kashmir has an urban population of over 2.5 million, distributed among 80 towns in the state but a large chunk of population is majorly concentrated in the cities of Jammu and Srinagar, these two cities account for 63% of the total urban population while Jammu city alone has whopping urban population of 576,198 as per census report 2011. It is one of the most prominent city of Jammu and Kashmir which acts as winter capital for the state. Jammu district is located in the sub-mountainous range of Himalaya's foothills. Due to its unique geographical characteristics, site may have some geographical constraints and implications Jammu enjoys locational advantage because of the presence of National

Highway-1A which passes through it and this strategic location helped Jammu to gain importance as a linkage corridor to Poonch, Kishtwar, Rajouri, Doda and it also serves as the gateway to pilgrim places of Mata Vaishno Devi (Katra) and Shri Amarnath shrine (Pahalgam) and tourist spots like Kashmir and Ladakh. Also with rapid urbanization, industrialization and mass migration from Kashmir Valley, (between 1989 to 1994), illegal migration across the borders and seasonal migration from other parts of the state contributed to the hike in population of Jammu which grew to 7,27,940 representing 225.90% increase over 1981 population.

Now Jammu is one of the fastest growing cities in India in terms of population as well as area. Besides this increase in residential population, there is also a magnificent increase in floating population of pilgrims to Shri Mata Vaishno Devi, military forces and their families stationed at Jammu also add to the population of Jammu.

Urban expansion and linear extension along the Jammu-Pathankot and Jammu-Akhnoor roads has led to the formation of stay colonies. The sudden increase in population invited unexpected crisis, the city was unable to accommodate and provide basic urban services like drinking water, sanitation, health facility, education, transportation, housing etc. This drastic pull of Jammu city was the significant factor responsible for prodigious growth of population. Migrants to Jammu city came from various parts of the state and across borders, thus beginning the story of transformation of Jammu city.

Based on well elaborated description of the study area it can be very well justified that this area provides suitable grounds to study peri-urban areas and the changes in it through time.

Thus, the significance of the study is to understand the process of structural and urban land use transformation, occupational structures and existing infrastructure. Yet another dimension of the problem that needs to be looked upon is to study the existing legal framework and policies and to identify the loop-holes in the existing legal framework and suggest appropriate solutions for it.

II. OBJECTIVES

- (i) To understand the growth pattern of Jammu city and its peri-urban areas.
- (ii) To understand the characteristics of peri-urban areas of Jammu.
- (iii) To identify the issues for the development of urban fringe areas and give suitable Suggestions and appropriate framework to solve the issues of Peri-urban areas.

III. STUDY AREA

The city of Jammu, popularly known as ‘City of temples’, acts as the winter capital for the state of Jammu and Kashmir. It is believed that the city of Jammu was originally founded by Raja Jamboo Lochan in the 14th century B.C, and the city was known by the name ‘Jamboo’ after his name which was later distorted to that of Jammu as we know it today.

Jammu District lies at the foothills of the Himalayas. Indo-Gangetic plains situated in the South merges with the Shivalik range which lies in the

northern part of the district. The District comprises of four tehsils i.e. Jammu, Akhnoor, Bishnah and R.S. Pura. The two major transit routes namely: - Jammu-Chhamb Road and Jammu-Pathankot Road can divide the entire district of Jammu into two distinct parts.



Fig. 1. Location of J&K w r t India.

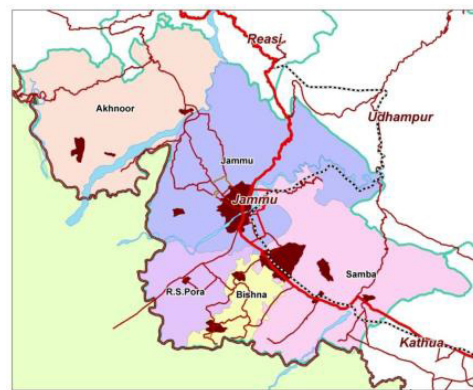


Fig. 2. location of Jammu city w r t neighboring districts.

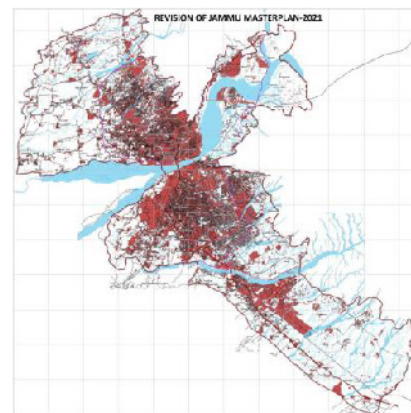


Fig. 3. Existing master plan boundary of Jammu city

Source: master plan, Jammu city2032.

The area falling at the northern side of Jammu-Chhamb Road and Jammu-Pathankot Road, has less fertile soil, comparatively underdeveloped and is usually rain-fed, this area is commonly known as Kandi area whereas the area which falls at the southern part of these Roads are more appropriate for agriculture, largely fed by canal water and tube wells for irrigation purposes and is relatively more prosperous.

A. The Urban Sprawl

In 1971, the spread of Jammu city was around 21.42 sq.km while an extension of the city was proposed in Jammu Master Plan 1974-94 covering an area of 130.36 sq. km to accommodate 5.52 lakh population by 1994. A tremendous increase in the area under urban agglomeration is observed while looking at Satellite imageries from 1986, 1990 and 1995 which shows decadal increase of 73.12 sq.km in 1986, 93.42 sq. km in 1990 and 143.52 sq. km in 1995 respectively. In the present-day scenario, the city has its center at the core area and it has experienced lateral expansion along the major transact routes like: - NH-1A and Railway line towards the South and along the Akhnoor Road towards North.

Talking about the Municipal limits of Jammu city which has undergone significant change over the years, the total built up area covered by the municipal boundary in 1972 was 14.90 sq.km with a tremendous increase of area from 20.38 sq.km in 1980, 33.08 sq.km in 1992 and with the establishment of Jammu Municipal Corporation in 2003 the municipal limits were extended up to 112 sq. km in 2011. In the present day scenario the municipal limits of Jammu city covers an area of about 170 sq. km but most of the new developments are taking place outside the municipal corporation limits.

The inception of growth of Jammu city lies in its rapid urbanization which took place mainly after the seventies. Many rural land and properties are divided and sub-divided for varying purposes like: residential, industrial and commercial uses. The agricultural areas falling within the limits of the Jammu Master Plan 1974-94 are getting converted into unauthorized residential colonies. The green belt and area under protected forest is continuously being encroached upon by the colonizers. As the city grows tremendously its problems related to land, housing facilities, transportation and management of essential infrastructure increases exponentially.

IV. PRESENT DAY SCENARIO OF PERI-URBAN AREAS OF JAMMU CITY

The outward extension of the city area engulfs several villages which are at the periphery of the municipal

limits initiating the phenomenon of urban dynamics in the village pockets.

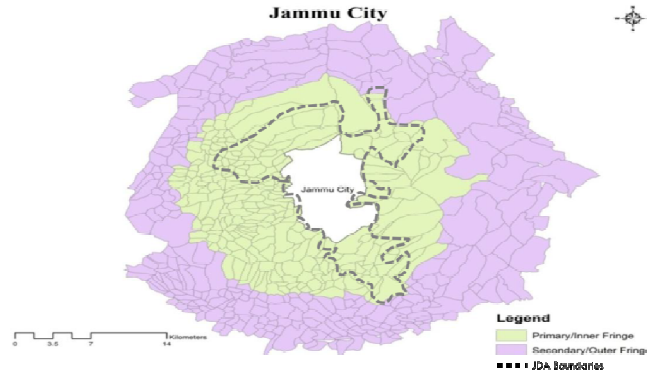


Fig. 4. Peri-Urban areas of Jammu city.

Source: Nisha, 2015

There are 1192 villages in the Jammu district itself, out of which 1054 villages are inhabited. More than 1/4th of the villages lie within the radius of 15-20 km from the city area. So, the Rural area which is at the periphery of Jammu city provides ample scope for current urban sprawl. The city is expanding at a very fast rate in size and as well as shape. This urban expansion of the city has absorbed many more rural areas, it has greatly affected the villages towards the southern side.

A. Impact of Urbanization on Peri-Urban Area

Impact of urbanization is clearly reflected upon changing land use patterns of peri-urban villages. The agricultural specialization and land use pattern of the peri-urban villages are greatly influenced by the need of the city. Agricultural activities are the most prominent land utilization among the peri-urban villages, of the Jammu city. But urban sprawl among these villages have altered the traditional agriculture which is being converted into horticulture, cash crop farming and other non-agricultural land uses like establishment of Brick-kilns etc. Apart from that the urbanization has also influenced the economy of the peri-urban areas due to the initiation of urban economic activities which has greatly affected the firm of agriculture, A huge shift from agricultural to non-agricultural occupation and services has been observed. There are examples of young people who have engaged themselves in jobs which are available in city but also practice farming in their ancestral farms and vice-versa young farmers practicing commercial and intensive farming are also engaged in part time jobs or running their own business available in the city area.

The rapid change in the economic aspects of peri-urban villages have greatly influenced the social and cultural structure of the villages. As it is rightly said that the social status of an area is determined by its economic status. The social and cultural impact of city on the peri-urban villages can be analyzed through number of variables such as:

Population growth, population density, sex ratio, presence of urban amenities, educational facilities, and changing vernacular social and cultural structure.



Fig. 5. Peri-urban areas at a glance, Jammu.

V. SITE SELECTION

To fulfill the objectives of present research, a primary survey was conducted in the villages which are in the proximity of Jammu city in all four directions but the maximum development was observed in the eastern part of the peri-urban fringe.

So, a detailed study was conducted on three peri-urban villages of Jammu city namely Chowadhi, Sunjwan and Bain-Bajlata, all three villages were selected on eastern peripheral fringe. Various criteria's which were considered for the selection of the villages were as follows:

- Within 6 km distance outside Municipal boundaries falling under JDA limits.
- High population growth rate and high density
- High literacy rate
- Higher rate of occupational transformation primarily from agriculture to other sectors.
- Higher rate of non-agricultural conversions
- Proximity to transport corridor

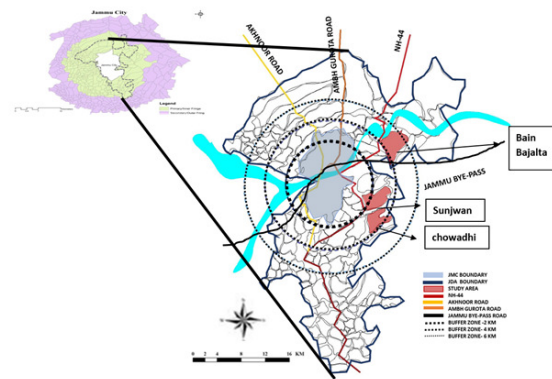


Fig. 6. Peri-urban areas under JDA, Jammu.

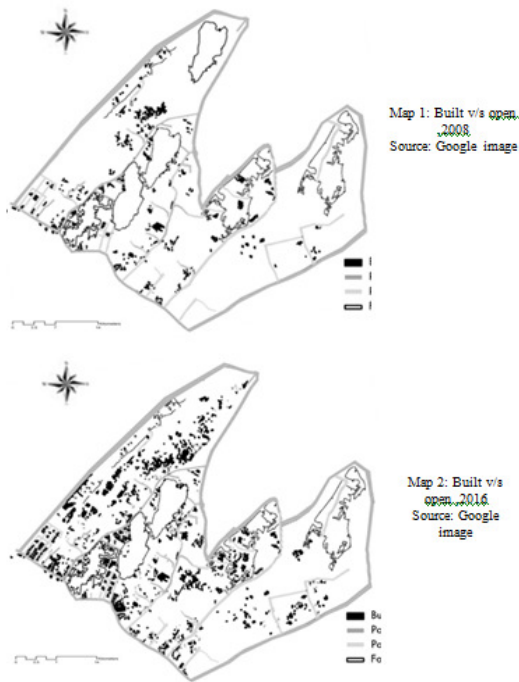


Fig. 7. Overview of village, Chowadhi.

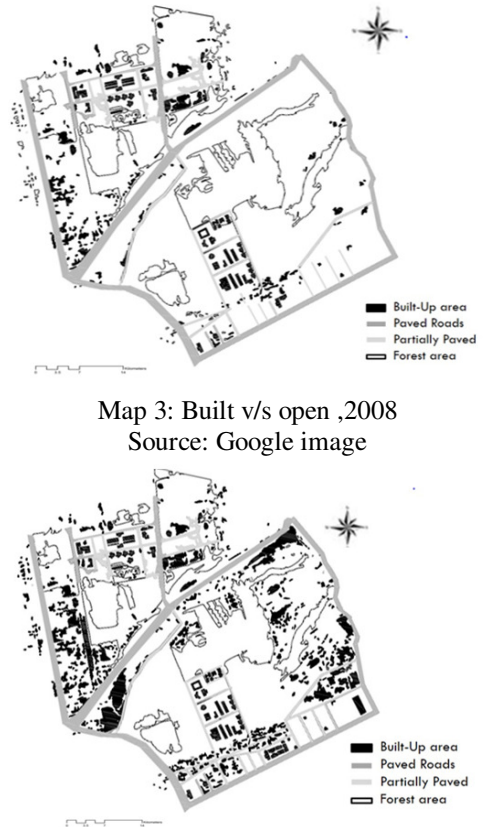
A. Brief Introduction of selected Peri-urban areas

Chowadhi - Politically and in the jurisdiction boundary, Chowadhi is in district Samba. Geographically Chowadhi is one of the villages, situated in the outskirts of Jammu city and more precisely it comes under Jammu Development Authority area. Chowadhi is in the eastern periphery of the Jammu city near NH-44, which is exactly 2.7 kms from Jammu Municipal Boundary covering an area of 265 ha. The village is situated in the hilly region which marks the start of Trikuta Hills and Pirpanjaal belt of Mountains towards North 35% of its area is plain. The villagers have two to three crops in a year if the weather is favourable and monsoon is on time.

Physical Transformation.



Physical Transformation.



The map shown above describes how the physical transformation of the village has taken place over a span of 8 years. If we look at the google image of 2008 for the village the ratio of built-up versus open area is 8% which has increased by 31%, the recent image of google earth taken in 2016 shows 39% built while open area is 61% over a span of 8 years

Sunjwan- Sunjwan is located at the eastern periphery of Jammu tehsil. Geographically Sunjwan is one of the big villages. The village is approximately 7.2 kms from the core city and only 1.7 kms away from Municipal Boundary covering an area of 2050.16 ha having population density of 722 persons/sq.km.

The map shown above describes how the physical transformation of the village has taken place over a span of 8 years. If we look at the google image of 2008 for the village the ratio of built-up area is merely 8% which has increased by 33%, the recent image of google earth taken in 2016 shows 41% built while open area is 59% over a span of 8 years.4

Bain Bajalta. It is a small village situated in a beautiful valley at the east bank of river Tawi. The village was initially known as Bajalta but when the dogra rulers came they made 101 (stepwells) in the village which is commonly known as "bain" in Dogri that's how the village got its name "Bain Bajalta". It falls on Jammu to surinsar way 8 kms away from Jammu(Panjtirthi) and 17 kms before surinsar which is a beautiful tourist place which got its name from a lake named surinsar lake. "Sur" means huge gathered pure water and sar is the place where the pure water is located. The village is spread over an area of 681.09 hectares having population density of 240 persons/sq.km.

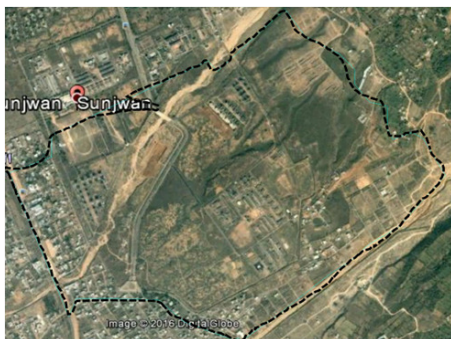


Fig. 8. Overview of village, Sunjwan.

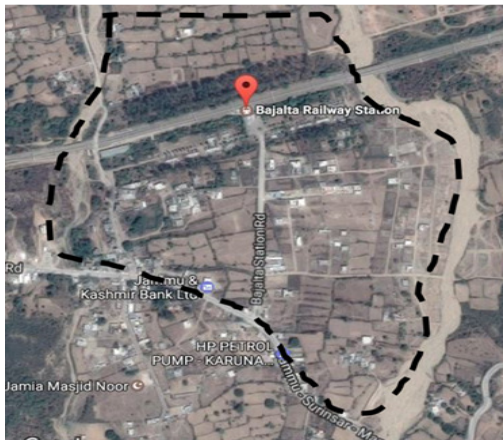
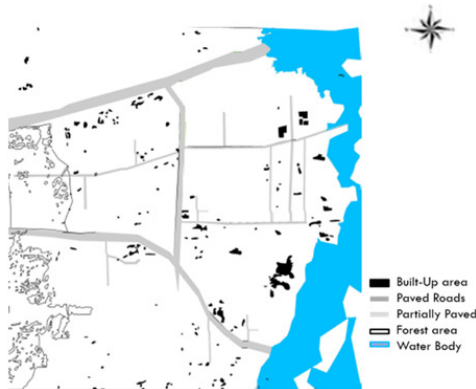


Fig. 9. Overview of village, Bain-Bajalta.

Physical Transformation.



Map 5: Built v/s open ,2008
Source: Google image



Map 6: Built v/s open ,2016
Source: Google image

The map shown above describes how the physical transformation of the village has taken place over a

span of 8 years. If we look at the google image Of 2008 for the village the ratio of built-up area is merely 7.62% which has increased by 2.32%, the recent image of google earth taken in 2016 shows 28% built while open area is 72% over a span of 8 years

VI. DETERMINANTS OF PERI-URBAN AREAS

A. Demographic changes (Population & Population growth rate)

Population and its growth rate is one of the major indicators of the urbanity level of any settlement. In 1981 population was 1054 in (Chowadhi), 2780 in(Sunjwan), 633 in (Bain Bajalta). In 1991 census was not conducted in the city As per 2001 census population was 1602 in (chowadhi), 9780 in (Sunjwan),1228 in (Bain Bajalta) which went upto 2944 in chowadhi,14808 in Sunjwan and 1636 in Bain Bajalta.

Now talking about the growth rate of the villages, As per census 2011 the growth rates of the villages are 45.5%,34.54%and 24.9% respectively which is higher than the growth rate for the state of Jammu and Kashmir (23.70%) and for the Jammu region which clearly indicates that all the villages are urbanizing at a very fast pace.

B. Literacy Rate

The Literacy level of a society affects its Socio-economic features. Talking about the peri-urban villages of Jammu city, a considerable increase in percentage of literacy rate has been observed during the review period. This information reveals that the increased literacy level among the peri-urban villages is affecting the traditional living style and the village is going through transformation.

If we look at the literacy rate of the all three study villages it has been observed, in 1981 the literacy rate was 23% (in chowadhi), 24.31%(in Sunjwan), 9.7%(in Bain-Bajalta) which saw a considerable increase in 2001, As per census data the literacy rate was 42.5% in (Chowadhi), 61.19% in (Sunjwan), 55.68% in (Bain-Bajalta) and in 2011 it was 73.2% in chowadhi,71.54% in Sunjwan,36.58% in Bajalt which is also an important indicator of transforming villages.

C. Population density

Population density is also one of the significant indicators to show the level of urbanity in peri-urban areas. Some of the factors which affect the density of population include availability of good infrastructure facilities like transport facilities, water facilities, educational facilities, health facilities etc.

As per census data, Chowadhi has maximum population density which is 1111 while Sunjwan and Bain-Bajalta has the population density of 722 and 240 consecutively in 2011.

The major reason behind it is the well-established base of highly influential people (IAS, KAS officers) from the valley as well as other places like: Poonch, Rajouri in the nearby places like Bathindi, Sunjwan, Sainik-colony etc which has attracted Real-estate market in the Chowadhi village and also lead to the establishment of the educational base and residential colonies are also coming up.

D. Physical profile of villages

The characteristics of peri-urban areas are clearly depicted by changing physical profile and land use pattern in the sample villages. To understand the changing character of peri-urban villages of Jammu City, the 1981, 2001 and 2011 data have been compared. The data has been collected from various secondary sources like Tehsil records, district handbook and primary survey.

Among Selected study villages Sunjwan is a big village with an area of 2050.16 ha than followed by Bain-bajalta and Chowadhi. Chowadhi is basically a small village with an area of 265 ha. All the selected villages are part of eastern fringe of Jammu city. Sunjwan is located at 7.2 Km while Bain-Bajalta is located at 8km followed by Chowadhi which is located at 11kms from Jammu city.

Analysis of census data depicts that village Sunjwan has observed maximum decrease in the percentage of agricultural land from 16.32% to 10.12% from 1981-2011 whereas in the villages like Chowadhi and Bain-Bajalta the percentage decrease in agricultural land is not much. In chowadhi agricultural land decreased from 33.80% to 30.34% while in Bain-Bajalta the agricultural land decreased from 31.16% to 29.00% which clearly indicates that Sunjwan is urbanizing at a faster pace.

E. Occupational pattern:

Peri-urban villages have observed a prominent shift in the Occupational pattern of the villagers. This occupational shift is mainly in the form of activity shift from primary activity to secondary and tertiary activity. In case of Chowadhi, the workers engaged in agricultural activities (primary sector) have decreased from 39.78% in 1981 to 7.30% in 2011 whereas in case of Sunjwan, the workers engaged in agricultural activities (primary sector) have decreased from 44.74% to 7.14% and in case of Bain-Bajalta the %age decrease in agricultural workers ranges from 95.52% in 1981 to 9.26% in 2011.

Since manufacturing industry doesn't observe a prominent shift in all these years the workers engaged in household and manufacturing sector remained between 5 to 15 which is less than 1% the only sector which observed a boom is tertiary sector. As per census

the percentage increase in tertiary sector ranges from 24.82% in 1981 to 69.86% in 2011 in case of Chowadhi while percentage increase in case of Sunjwan ranges from 44.74% in 1981 to 92.16% in 2011 and In case of Bain-Bajalta percentage increase from 4.47% to 8.89% was observed.

Above analysis shows that the villages are urbanizing at a faster pace as non-agricultural workers are increasing at a tremendous rate.

VII. PROFILE OF DEVELOPMENT

-The urban development in the study area continues without any guidelines in the absence of any master plan or development plan.

-As the region, doesn't have any development plan, land use map, so haphazard and scattered development will take place.

-Developments are taking place along the major roads, while the inner plots are also sold and vacant.

-The existing road network is not connected with the major road and no other roads are planned to cater the future and present traffic.

-The residential development is in progress at a rapid rate, however, implication of social facilities, civic amenities and infrastructure has not kept pace with it.

VIII. MAJOR FINDINGS AND OBSERVATIONS

A. Positive Aspects in Present Development:

1. Although Jammu Master Plan talks about the comprehensive development of Peri-urban areas but no plan of action has been discussed in this account, however all the surveyed areas are provided with basic broad road network, apart from that all the surveyed areas are provided with necessities like electricity supply, water supply, education facility etc. Even though there are lot of shortcomings in the present conditions of these peri-urban areas but the authorities have shown some form of consciousness to improve the living conditions of the residing population.

2. Apart from government's negligence in providing serviced land for urban development and its failure in providing basic infrastructure facilities like health, education or market facilities, the Market forces are constantly pushing such lands for development further inviting the private sector to address the problems related to peri-urban areas.

B. Negative Aspects in Present Development:

1. Jammu Master Plan talks about the development of Peri-urban areas but the master plan has not described any plan of action in this context it is quite superficial which is limited to paper work only which leads to haphazard development of these areas.

2. Non-Agricultural conversions are taking place at a very high rate for residential as well as commercial purposes without taking any permission from the collector (NA department). This in turn is adversely affecting the productive agricultural land.

3. Large chunks of lands are being sold but left undeveloped that means the land of these areas are under land speculators who are working in the market.

4. As such no dedicated planning framework is being followed by the government agency to look after the development of peri-urban areas these areas are still deprived of urban amenities like sewerage and storm water drainage, solid waste management, water supply, health care facilities. The study areas show that there is a huge gap between the demand side and amenities provided like there is absolutely no solid waste management system in these areas, out of total peri-urban area only 30% or below area is covered with open drain system apart from that the water supply and health facilities are very poor though the education system is improving.

IX. APPROPRIATE APPROACH FOR SOLVING THE ISSUES IN THE PERI- URBAN AREAS

A. Restricted Development Permission in the Peri-Urban areas

Non-agricultural conversions of peri-urban areas should be very restricted and limited only for some specific land-uses like selective Industrial, Institutional purposes and very low density residential purposes.

B. Extending the (Urban Development Authority) limit

-JDA limits can be extended up to the areas located at the peripheries of the municipal boundaries which are under high pressure of urbanization.

-JDA should introduce development plans and T.P. Schemes for the development of peri-urban areas already under its limits and make planning strategies for newly included areas in its limit.

C. Regional Development Plan

-Demarcation of Jammu Metropolitan Region should be initiated based upon the influence zones of economic activities, daily commuters and transportation and the region may include few villages which are under the high urban influence zones situated in the surrounding districts.

D. Village Development Authority

-Village Panchayat should convert into Village Development Authority.

-The functions of the VDA, apart from the Revenue collection and administration, to adopt the plan passing system, with the co-coordination of Town Planning and Valuation Dept. and District Panchayat (District Development Officer).

X. CONCLUSION

Metropolitan cities grow and expand, very rapidly change their limit. The villages located surrounding often come under the influence of urbanization and pressures, depends on the direction and intensity of growth of the city. Villages located today in the peri - Urban Area, agglomerates in future within an urban area. The lack of proper guidelines and monitoring systems at the institution level in the situation of peri-Urban Area (Villages) than within the Urban areas where, there is comparatively strong Development Control Regulations, Planning Guidelines and Monitoring System; often attracts the people and developers to concentrate or to invest in these areas, particularly in the immediate peripheral area of the Urban limit. Gradually the area develops in absence totally absence of planning.

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