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# LAND USE ANALYSIS IN ALWAR: PROBLEMS AND SUGGESTIVE STRATEGY

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**Abstract:** *Urban centres are of fundamental importance not only for providing home to more than fifty percent population but also for their pivotal role in socio-cultural life, economic activities, administration, and governance. Here, urban land acts as a base for growth and development. The issue of land use and planning is more and more important in any part of the world. Accelerated urbanization in last decades, especially in developing countries has not only lead to increase in the number of urban centres very fast, but also the number of their population. Consequently, lots of problems (e.g., increasing crowdedness, lack of houses, underdeveloped infrastructure etc.) have appeared, which can have a great impact on the urban land use and planning too. These unfavourable consequences and sustainable development require a more effective urban land use and urban land use planning policy. In this direction, thorough analysis of urban land use and critical review of urban master plan of Alwar city's in India has been made for better understanding of urban land use and underlying processes in developing countries and to promote the activity of urban planners. The present study is based on primary data as well as secondary data. The primary data has been collected for better apprehension of the present land use categories, structure, and related problems and issues. The study reveals that people's awareness and their active participation in urban land use planning is necessary. Research methodology adopted for the present work is a blend of qualitative and quantitative techniques using primary and secondary data. Apparently, the research methodology consists of 'explanation' and 'evaluation' phases.*

**Keywords:** Urban Land, Land Use, Planning, Population Growth, Slum



## **Introduction**

Rapid urbanisation and consequent growth of population in Indian cities is putting enormous pressure on existing land use and structures causing several problems like housing congestion, slums, overcrowding, traffic jam etc. and environmental issues related to pollution, hazards, and degradation of city health. All these consequences have far reaching impacts on overall health and liveability of the city. Therefore, problem of land use requires adequate planning and control to ensure harmonious development and functional efficiency of the city. Land use planning is an art as well as a science. It neither predicts ‘what will be’ nor claims ‘what shall be’ but provides an image of ‘what is likely to be’ (Gallion and Eisner, 1986) to facilitate and encourage the optimal growth of dominant functions, strengthening the intra-urban linkages and providing the elbow room for spatial growth (Buch, 1987). Land use plan sets forth policies intended to encourage up gradation and preservation of the existing city and to provide an orderly, efficient, and logical extension of urban development in predominantly undeveloped area surrounding the city (Archer, 1990). Its main objective is to create prerequisites required to accomplish a type of land use, which is environmentally sustainable and compatible, socially desirable and economically sound (Chapin, 1995). There have been several policies and regulations regarding the use of urban land in Rajasthan, but these are fragmented in terms of their objectives, orientation and institutions. These regulations and policies are inefficient, inconsistent and conflicting with each other. Consequently, cities of Rajasthan including Alwar are facing several problems and issues related with urban land use and morphology. Rapid urbanisation and consequent growth of population in Indian cities is putting enormous pressure on existing land use and structures causing several problems like housing congestion, slums, overcrowding, traffic jam etc. and environmental issues related to pollution, hazards, and degradation of city health. All these consequences have far reaching impacts on overall health and liveability of the city. Therefore, problems and issues related to land use requires adequate land use planning and control to ensure harmonious development and functional efficiency of the city. Land use planning is widely offered as an appropriate tool to drive sustainable development (Godschalk, 2004; Awuah, K., Hammond, F., Booth, C., & Lamond, J. 2014).

## **Study Area**

Alwar City is located on 27° 32' 30'' N latitude and 76° 37' 30'' E longitude in North-eastern Rajasthan. The city covers an area of 48.14 sq. km and possesses population of

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3,15310 persons (Census, 2011). The Aravalli Hills traverse the town in the west and south-west. Alwar is well connected to New Delhi and Jaipur by railway and roads and is also easily accessible from Haryana and Uttar Pradesh. The city has a historic-cultural background and has been a significant centre for tourism, trade and commerce, education and health facilities.

### **Objectives**

Major objectives of the study are:

- To highlight major land use problems and related issues, and
- To recommend proposals and measures for proper land use planning of Alwar.

### **Methodology**

The present study is based on primary data as well as secondary data. The primary data has been collected through comprehensive field survey using Base Map and Google Earth Imageries and conducting formal interviews for better apprehension of the present land use categories, structure, and related problems and issues. Comprehensive field survey has been carried out along the major roads and streets to examine and identify components of the city such as the location and structure of landmarks and activity nodes. The field survey also helps in functional analysis to examine the relationship of activities among the various land uses and to identify major land use problems and issues. : The basic information on history, population, land use, industrial and infrastructural facilities, i.e., transportation, public utilities, health, education and other socio-economic facilities have been obtained from different government departments at the state and municipal level including Rajasthan Oriental Research Library, Alwar; Government Museum, Alwar; Rajasthan State Archives, Bikaner and Alwar; PWD, TCPO and Nehru District Library, Alwar. for the analysis and interpretation. The field survey was also include conducted through personal interviews and questionnaires from commercial developers, citizens, politicians, bureaucrats, academics, engineers, landowners, employees, industrialists and planning authorities to understand the problems and issues related to land use and planning as well as suggestions were also invited regarding future requirement of the Alwar city. Master Plan of the city has been used as secondary data.



### **Urban Growth: Historical Perspective**

The city did not expand and remain confined within the boundary wall till 1940, because people required security from the external threats in the form of frequent wars and fear of wild animals. Consequently, the pattern of urban land use and its structure was also accomplished accordingly. The houses were built side by side along narrow zigzag lanes and streets. Commercial structures developed on ground floors of the residential houses having three separate chambers. After Independence, the requirement of people changed considerably. Though the layout of roads was already laid down in middle part of the city during the Vinay Singh's period, but growth of urban land use and its structure could take place in this very part only after the Independence, when increased immigration required accommodation of immigrants. Consequently, several planned and semi-planned colonies were developed. These developments differ that of old walled town. Size of Houses decreased considerably with increasing number of nuclear families. Expansion of various functions occurred to fulfil requirement of the rural people also. Commercial areas dealing in agricultural tools and machines, grain and vegetable markets have developed along the major outgoing roads to facilitate rural people. Further, it is the requirement of industrial labourers due to which the urban land use and its structure developed nearby the industrial areas giving rise to urban sprawl.

### **Urban Land Use and Morphology: Problems and Issues**

Alwar city is witnessing rapid growth of population on account of development of commerce and industries. Regular and standardised planning has become less effective since it is carried out without incorporating changing needs of growing population and socio-economic structure of the city. Consequently, seriousness of problems associated with haphazard and imbalanced growth of existing urban land use and its structures is rising rapidly. Some of the major problems and issues are as follows: Rising cost of land and accessibility of urban land in Alwar has become a serious issue. Land value in Alwar is found highest in middle part where urban amenities and infrastructures are developed at best. It decreases on both sides, i.e., towards densely built inner part and sparsely developed outer part. It is also found relatively high at major cross-roads and along Delhi and Jaipur roads in outer part. High land value has severe repercussions in the form of vast number of vacant plots amidst residential colonies, reduction in size of land plots as well as in size of built structures and increase in adoption of vague aesthetic and architectural style. The dominant

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bourgeois class in seek of cheaper land is settling down far and wide across the city boundary. Consequently, built-up area of city is expanding horizontally engulfing cheaper agricultural land of outer parts.

The growth of urban land use, to a great extent, has been occurring rapidly towards MIA in east along Delhi road. In future, it may have detrimental effect on both people and industries. At that time, the foremost solution will be carved out in the form of shifting of industries to another location. This would require huge amount of money and concerted efforts right from acquisition of land for new industrial site to development of appropriate infrastructure therein. The process of shifting will definitely hamper functioning of industrial units and there will be no surprise if multitude of units gets shut down. It will lead to loss of employment and tax money affecting the overall health of the city.

Further, development of MIA and high land value in city has induced growth of urban sprawl on Delhi road which is characterised by low density, leapfrog development, and unlimited outward expansion. Availability of cheap agricultural land free from municipal taxes on main outgoing roads added by increased automobile are attracting investment of money on land and structures and where no prohibiting or controlling laws are in operation. Leapfrog and low-density pattern of development has also encouraged misuse of land as vast amount of agricultural land is left vacant or unused. Examples from other cities indicate that if this type of haphazard and uncontrolled growth persists for years then slum formation may occur in outermost part of the city.

The city does suffer from misuse and abuse of land heavily. Residential houses in commercial areas of Road no. 2, Pratapbas, Jublibas and at major crossings characterised by high land value prove uneconomic to take the profitable returns of the land. Commercial structures built by UIT at various locations have not been used properly because of their ill condition and high rent. Consequently, many of these structures are lying vacant and unused. Many shops around Hope circus running on petty rents in structures of the decade 1960s and 1970s developed by UIT are now proving uneconomic. Further, these structures need to be restructured and modified so as to make them more profitable and aesthetic. Location of small scale and household industries particularly telghani and khandsari industries in Kedalganj area has now become unsuitable. These industries suffer from lack of space and obstruct the desirable privacy and peace of the residents by causing constant noise and nuisance in the surroundings. Nevertheless, of construction of new wholesale grain and

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vegetable markets on Delhi road, many shopkeepers at Ghantaghar vegetable market and Kedalganj grain market are not willing to shift their establishments from this high populated area to less densely populated area due to prospects of high demand. These shops appear to be misfit as the surrounding area is characterised by dominance of retail shops. Due to lack of sufficient land, it causes traffic jam often and has prevented natural expansion of retail commercial establishments.

The old crowded and haphazardly grown inner zone associated with central commercial area is characterised by winding streets and lanes and two or three storeyed dilapidated structures. Administrative areas are located in scattered manner due to which effective and immediate coordination lacks among different departments of the governments. Further, many government offices are running in small rented buildings in different residential colonies due to lack of sufficient developed land for administrative purposes. Majority of educational institutions are absolutely devoid of the facilities like playground, library, and open spaces. Parks and playgrounds developed in residential colonies except in high income residential areas of middle part in the city are in very poor condition due to lack of maintenance. Even in many colonies in outer part, facility of parks and playgrounds does not exist at all. Here, vacant land and open spaces are utilised as playgrounds. Instances of overlapping use are very common in many colonies. The condition of urban amenities and services, i.e., sewage and drainage facility, sanitation and drinking water supply and other housing services is very poor. Sewage in most part of the city flows through open drains without proper treatment. These open drains remain clogged with garbage all-round the year due to poor maintenance and care and in time of heavy rainfall causes overflow of waste water on roads. Likewise, system of solid waste collection and its proper disposal is not up to the mark. Consequently, mounds of garbage are observed here and there all over the city. There is no proper landfill site. The collected garbage is dumped in low lands along Delhi bypass road close to residential areas of NEB. Lack of sanitation facilities and uneven supply of drinking water is a major problem for the residents of the city. About 8 percent of the total households are still using pit latrines, 55 percent water closet latrines and 19 percent other types of latrines. About 17 percent of the total households have no latrine facility. Such households are located in vicinity of the Aravalli, in villages and newly semi-developed colonies in fringe areas. Residents of inner part are facing acute shortage of water as the timing and duration of water supply is not fixed as well as pressure of water also remains

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very low. Many households are absolutely deprived of tap water and rely on public hand-pumps only.

The slum and squatter settlement is a problem in the Indian cities as in Alwar. These areas are characterised with very high density of population and structures, high intensity of land use, lack of open space, poor housing, lack of urban amenities and services including safe drinking water supply and sanitation, and unhygienic environmental conditions. Though percentage of population and land under slum areas is considerably low in Alwar city but its growing nature is a cause of concern for planners. Further, old slum areas and new slum areas having different characteristics and problems need specific approach of planning for each to cope up with their problems. A few slums are also developing near the old village sites without any planning. The city is lacking the aesthetic magnificence and green trees not only in the inner zone of the city but very much in the outer zone. Natural vegetation in the form of shrubs in foothill areas is rapidly diminishing due to increasing encroachments and grazing activities. Further, houses are losing their architectural beauty on account of stark negligence and process of restructuring and modification. In outer part, high land value and high cost of construction has compelled people to adopt vague architectural style. Trees are very limited in number, mostly confined in Old Industrial Area, mandis, and in nurseries, as the part has evolved on agricultural land. Introduction of rural ways of life in urban area ‘rurbanisation’ has been rapidly increasing which reflect in rural dwellings, domestication of milch animals, scattered cow-dung, etc. For all these reasons, city looks unclean.

Forests in Alwar hills act as lungs for the city. Besides natural vegetation, it is a home of several types of wild animals and possesses historical Bala Fort and temples of Karni Mata and Hanumanji. An old adage ‘quilaupar baarishna tale (heavy rainfall is inevitable if clouds are roaming over the fort)’ is enough to signify its importance for the Alwar city. Nevertheless, of reserve status of these forests, human activities have grown rapidly in the name of tourism ever since good metalled roads have been constructed in these forests. It facilitates regular movement of police and Army to their outposts at Bala Fort, pilgrims of Karni Mata fair, and rural people of village Ravan Dehara and the villages located west of Alwar hills. If such human interferences go on unbridled, then it will have great impact on city’s environmental and ecological balance in future. Nevertheless, of comprehensive Master Plan and other development plans, Alwar lacks the standardized city planning based urban development. Sectoral plans have not been synchronized with the objectives of the master

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plan. Its major cause may be attributed to illegal developments and powerful nexus of corrupt bureaucrats, politicians, land mafias, and businessmen due to which plan is moulded at grounded level during its implementations and executed accordingly to fulfil their petty greed. Sometimes particular plan implemented on paper only.

### **Strategy and Recommendations for Land Use Planning**

Land use planning in Rajasthan has become regulatory, rigid, static, and influenced by vested interests, while it should be facilitative, flexible, dynamic, and participatory in nature (Rogers, 2000). Consequently, Alwar is facing crucial problems like poor development of socio-economic facilities, lack of resources for development of infrastructures and basic urban amenities, far and wide growth of structures due to large differences in land values, and growth of urban sprawl along Old Delhi road near MIA. These problems are outcome of poor and ineffective implementation of Master Plan and land use planning practices by the Urban Local Bodies (ULBs). The reasons frequently cited for deficiencies on the ULBs are their poor revenue base and dependency on the financial transfer from the higher levels of government (Mohanty, et al., 2007). Keeping in view the preceding analysis of various land use problems and related issues, an urban planning for Alwar city has been suggested as a modified 'Development Plan' considering the Master Plan of the city. It is modified because the Development Plan does not make changes in urbanisable area and adopts the same as proposed in the Master Plan. The Master Plan has been prepared for a population of 5 lakh persons which stands close to the projected population of the city in 2031 A.D., i.e., 524,652 persons.

### **Expansion of city Boundary**

To restrict growth of urban sprawl, the municipal boundary must be extended up to Bhaktalki chowki on both sides of the Old Delhi road. This area is already included in the Master Plan as potential urbanisation area. Consequently, enforcement of municipal laws and taxes would certainly lead to hike in land prices in this area. The result of increase in land prices would reflect in retardation in leapfrog structural growth outside the current municipal boundary and development of unused and vacant land in fringe areas of the city. It would underpin urban local bodies (ULBs) in better governance practices ascertaining balanced growth and development of the city.





### **Bulk acquisition of urban land**

Bulk acquisition of urban land by government agencies for development schemes may greatly help to maintain the price of residential land at a level suitable for housing for dominant middle and low-income groups. Further, this sort of acquisition would eliminate the possibility of 'inequitable' distribution of land and housing opportunities as well as development of 'insufficient' land use patterns arising out of tendency of private developers not to provide adequate infrastructures like roads, parks, schools, hospitals etc. This tendency of private developers is attributed partly to their limited resources and financial constraints and partly to gain maximum profit from every bit of land instantly. In addition, under government's control housing for low income group can be ascertained at the low level of land prices which can be adjusted with the profits realized from the sale of land for other types of uses, i.e., industrial, commercial, and residential for the high-income group.

### **Hierarchical Cellular Structure of Planning Units**

A planned city for an environment of convenience should have a hierarchical cellular structure with nuclei to contain essential facilities and services at different levels, i.e., neighbourhood, community, and zonal level (Master Plan-2021 of Delhi, 2007). The Development Plan for Alwar city also adopts hierarchical cellular structure including four tier planning units. These planning units are based on population criterion where in provision of facilities and services increases towards higher level of units. At the lowest level of planning unit, housing cluster, i.e., a group of 150-200 families, will be facilitated by a primary/middle schools, park and playgrounds, and a few petty shops for day to day needs. Grouping of housing clusters comprising population between 4,000 to 5,000 persons shall form 'neighbourhood' unit with senior secondary schools, health clinics, local shopping centres and comparatively bigger park and playground. Residential Planning Area comprising population 15,000 to 20,000 persons will have an additional facility of a dispensary, police out-post, community hall, religious buildings etc. Planning zone comprising population between 70,000 to 1 lakhs will have higher level of facilities and services like hospital, family welfare centre, child and maternity home, police station, recreational clubs, socio-cultural facilities, night shelter, library, gymnasium, multi-purpose hall, district shopping centre, community park, sport centre, bus stand, waste water treatment facility, parking spaces etc.



### **Restructuring of Planning Zones**

Looking at the irrational and spontaneous categorization of planning zones in Master Plan, the Development Plan restructures planning zones of the city as Old City Inner Zone, Middle Zone, Outer Zone, MIA Zone, and Peripheral Control Zone. These zones have been demarcated on the basis of multitude of different factors including similarity in historicity of areas, land use and morphological characteristics, existing population size and trend of population growth, socioeconomic characteristics of the society, and considering the existing problems. These zones may prove more useful for planning purposes against the naive planning zones of the Master Plan. Though major problems are almost same in all zones, but magnitude and intensity of various problems differ greatly from one zone to another. Besides, each zone has its own particular problems and solution of these problems needs distinct and separate planning practices and methods. For example, the Old City Inner Zone is the oldest and densest part of the city which needs decentralisation of functions, redevelopment and reconstruction as well as renewal of old dilapidated houses, proper use of vacant buildings, slum improvement, conservation of monuments along with renovation and improvement in existing basic urban amenities and services. But on the other hand, the Outer Zone which is in emerging developing stage and has very low density of population required densification and proper channelization of growth and development through appropriate selection of location of various functions and economic activities as well as through strengthening of infrastructural facilities. These zones have been demarcated on the basis of multitude of different factors including similarity in historicity of areas, land use and morphological characteristics, existing population size and trend of population growth, socio-economic characteristics of the society, and considering the existing problems. These zones may prove more useful for planning purposes against the naive planning zones of the Master Plan. Though major problems are almost same in all zones, but magnitude and intensity of various problems differ greatly from one zone to another. Besides, each zone has its own particular problems and solution of these problems needs distinct and separate planning practices and methods.

### **Digital Mapping of Urban Land and Functions**

Urban land use planning requires assessment of resource potentiality, its availability and consumption in the urban areas. This can be done through developing Urban Information System (UIS) and through preparation and integration of thematic maps using satellite data

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and GIS techniques. This would consistently help in calculation of changing land requirements, analysis of land use change, land use suitability, carrying capacity, environmental sensitivity, urban sprawl and determination of composite functionality index to setup various amenities such as educational, medical, recreational etc. The digitized maps of different urban land uses will provide a framework to planning processes.

### **Need of Community Participation**

The people of Alwar city has to be mobilized to participate in the urban land use planning process. This will provide them a sense of citizen participation which is an important factor for any planning scheme to be successful (Oduwaye, 1998). This requires a tremendous task involving awareness and training campaigns to light the sense of being urbanites, making people's participation mandatory through legislation and mobilisation of public opinion. Lack of active public participation in preparation and implementation of the Master Plan and other development schemes is the most significant reason for their limited success. It is the people who can identify their problems and also prioritize for addressal better than the government officials. The role of local community in outlining development plans including rehabilitation, renewal, and up-gradation programmes for the inner part, and in process of land acquisition for further growth and development in outer areas must be ensured. This will help in mitigation of development conflicts arising during the execution of the various plans. Each section of the urban society has specific problems and interests. Here, the role of planning authorities should be to synchronize all problems into coherent development plans while satisfying needs of the society. But, formal interviews surfaced out the incapability of harmonization and bias of the planning authorities, while sketching development plans. Hence, proper training and sensitization of planning authorities in this direction is of utmost importance for planning process. A monitoring committee consisting of local community should also be set up for regular monitoring and implementation of different development plans. Further, participation of local community decreases the possibility of corruption and any modification in plans favouring interest of particular person or section of the society.



### **Land Use Plan: Proposals**

Planning recommendations have been made to encourage socio-economically efficient allocation of urban land such that the urban development could take place in a proper manner at minimum resources. Projected population in 2031 A.D. is close to the horizon population of the Master Plan (2021), hence, no additional land for future urban development of the city is required.

**Residential Land Use:** The Development Plan adjusts the projected population through densification of less density areas and construction of vertical buildings in the newly developing areas. The Development Plan proposes density ranging from 100 to 250 persons per ha. High density (150-250 persons per ha) residential areas have been proposed along major roads and near important work centres like mandi, OIA, Hope circus, and Kedalganj, while comparatively low density (less than 100 persons per ha) areas in fringe areas and off the major roads. A large part of excessive land under administrative use along Delhi bypass road and land under agricultural land north of Shivajipark has also been earmarked for residential land use. Growth and development should be vertical rather than horizontal. For this, development of individual plots should be discouraged by motivating and convincing people for adopting group housing. It will conserve rich fertile agricultural land and will increase density of population to be optimal. In increased density scenario, it would be easier for government agencies to provide infrastructural facilities to a comparatively large number of population at minimum resource base and financial investment.

**Commercial Land Use:** The trade and commerce are the backbone of urban society where movement of people and commodities provide the economic base for the development of the city (Singh, 2002). Hence, the commercial land use planning has been adopted to diversify the commercial activity in the city through developing neighbourhood and district shopping centres, shopping complexes, modern stores in commercial centres as well as renewal and redevelopment of central commercial areas. District shopping centres have been provided at Mungaska, Kalakua, Bhawani Top circle and at Lohiaka Tibara to prevent unplanned growth of commercial land use. Besides, land for godowns and warehouses have been earmarked along the Delhi bypass road. These areas will be well linked with wholesale commercial area and easily accessible from residential areas. Further, a few suggestions for proper development of commercial land use are as: The shopping centres should be as such to meet the needs of the future population, future parking spaces, and other relevant activities. In

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shopping centres, compartmentalization of activities providing a range of choices is needed.

**Mixed Land Use:** Besides commercial and residential land use, health and educational land uses are evolving gradually along the Old Delhi road between Delhi circle and Lohiaka Tibara. Hence, looking at the ongoing changes, the area has been earmarked for mixed use to achieve better synergy between workplace, residence and transportation.

**Industrial Land Use:** This is well confined in two specific areas, Old Industrial Area (OIA) and Matsya Industrial Area (MIA). OIA is falls under municipal boundary, while MIA a few km east of the municipal boundary. The industries running nearby the Hope circus should be transferred in OIA. For this, the land lying vacant and unused land can be used. The industrial growth in the city has almost stagnated since the shifting of NH – 8 approximately 60 km away from the city and subsequent growth of new industrial centres at Bhiwadi, Bahrer, and Shahjahanpur. Consequently, the economic base of the city has weakened badly. Hence, it is necessary to attract entrepreneurs to establish new industries at MIA. The road connecting Delhi, Jaipur and Agra should be widened enough for rapid mobilisation of resources and people.

**Transport Planning:** The Development Plan proposes construction of Jaipur bypass road from Bhaktal ki chowki on Old Delhi road to Burja on Jaipur road. It would pass through MIA as well as villages of Goondpur and Bhajeet. Further, a link road from Bhaktalki chowki to Delhi bypass road has been proposed. These roads will help in vehicular decongestion on Old Delhi road while fostering uninterrupted and smooth vehicular movement. Besides, bus and truck terminals have been proposed at Mandimor and Lohiaka Tibara, respectively. In case of Alwar city, there are many problems and issues related to transportation among which – i) reduction in need of travel, ii) shifting of mode choices towards non-motorised transport and public transport, iii) development and maintenance of roads, and iv) strengthening institutional capacity and developing accountability mechanism are very much significant. The population of the outer zone makes frequent visits to commercial areas of the inner zone. Development of mixed land use and work places nearby the residential areas of the outer areas is one of the ways by which reduction in frequency of travel can be ensured. It will also help in reduction of vehicular traffic and will encourage people to opt non-motorised modes of transport. Alwar city immediately needs the completion of proposed bypass and link roads to control the movement in the outer zone of the city. This will minimise the traffic pressure in the middle as well as inner zone of the city. The improvement of road conditions includes

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widening of roads in the inner zone as far as possible, maintenance of roads in the inner, middle and, especially, in the outer zone. Parking areas should be developed in areas particularly adjacent to the market areas of the Hope circus, Kedalganj, and Krishi Upaj Mandi and near major work places.

### **Land Use Plan: Proposals for Other Related Issues**

The water supply may be improved by Government initiation through restructuring of networking and installation of tube-wells in the grid system. It will need a huge renovation with financial assistance through different financial corporations. Sanitation facility is very poor, especially in the inner zone of the city. The Government of Rajasthan has made a step towards an integrated and coordinated project with assistance from Asian Development Bank under the Rajasthan Urban Sector Development Investment Programme (RUSDIP). But, implementation of the programme has yet to be taken place. The beauty of the urban living exists in the open space, parks and gardens. These are immediate requirements in the middle and outer zones of the city, where a regulation with controls may be initiated through legislation by the Government for the aesthetic beauty and healthy environment. The razed building sites in the inner zone may also be used to develop small parks. However, such development needs crucial and strict decisions.

### **Urban Slums**

Slums are one the major problem of Indian cities including Alwar city. In Alwar city, problems of slum areas differ greatly from slums of the old city to slums of the new city. In slums of the old city, there is need to provide secure source of safe drinking water. This can be done by augmenting capacity of water supply system as well as overhauling poor pipelines and machineries. Further, increase in duration of water supply, installation of public taps and handpumps, prohibition of electric pumps are also equally important to ensure supply of safe drinking water to urban poor of these slums. These slums also need public toilets and lavatories as residents defecate in open area along the foothills. The old dilapidated unused houses in the inner part may be used to decongest these slums. Slums in the new city are mostly developed as squatter settlement by illegal occupation of land and encroachment. Hence, these slums are unauthorized, and, therefore, unable to access to urban amenities and services. Besides provision of basic urban amenities and services, there is need to provide security of tenure as well as financial assistance to make their temporary katcha houses into their own pucca houses. Further, settlements along roads, specially along the Narumarg and

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Old Delhi road, should be provided alternate land for their relocation as roadside activities of residents of these areas hampers traffic often as well as produces a blighted landscape on both sides of roads.

### **Planning for Historical Sites and Places**

Alwar possesses a number of sites and places of historical, architectural and cultural importance. These need not only preservation but also concerted efforts for their beautification so as to maintain their dignity, excellence, and historicity intact to attract more and more tourists. Due to paucity of funds and interest, large historical monuments have not maintained properly as have been seen in case of Bala fort which has turned into ruins. These monuments are presently used for various purposes, i.e., City Palace for administrative purpose, Vinay Vilas Palace for educational purpose etc. and thereby lose their heritage value by changes accorded in them. Historical places including Bala fort, cenotaph of Fatehjang, Tripolia, Vinay Vilas Palace etc. need immediate attention considering its historical design and significance. For such sites, specific conservation plan of historical sites must be included in the Master Plan. Built heritage assets of the city must be identified and documented through a survey, mapping, architectural plans of individual buildings, visual photography, etc. The surroundings of the historical monuments will have to be developed and commercial and transport activities should be better managed. The task of conservation of monuments and development of their surroundings may be given to private developers by making mandatory provision of community participation at local level.

### **Urban Environmental Problems and Planning**

In the absence of adequate measures taken to protect the environment, urban development and expansion has resulted steady deterioration of the city's environment resulting in adverse impact on land, air, water, soil and forest. It is for this reason that the city of Alwar is included in the 50 most polluted urban centres of India, where level of solid particulate matters (SPM) and SO<sub>2</sub> are found critical (Khullar, 2008). Though major industrial areas, MIA, lies outside of the city boundary, but its location on wind way helps to affect the city. Major pollution generating industries include stone and marble cutting and polishing industries, chemical industries, metal based industries and forest based industries. The metal based and Telghani industries in Hope circus area produces imperceptible noise pollution along with huge amount of solid waste scattered here and there in mounds. Besides,

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inadequate and poor sanitation, sewerage and solid waste disposal services leading to open defecation, mounds of garbage and overflow of garbage laden sewerage on roads enhances environmental complications.

The inner part is facing problem of urban decay due to increasing number of dilapidated and obsolete structures. Most of these houses represent Rajput-Mughal style of architecture. Inner city renewal programme may check further decay and conserve these structures by restoring the historicity of the inner part. In outer part, poorly developed infrastructure subsequent upon sparse growth of structures has led to increase in incidences of social crimes, i.e., theft, murder, robbery, gambling etc. In such an environment, people always remains under deep psychological pressure and stress. The urban environment in these areas may be improved by providing street lights, unrestricted supply of electricity, patrolling of police, and increasing the number of police out-posts. Increase in human interferences in reserved forests of the Alwar hills has been affecting flora and fauna. It is need of the hour to conserve these forests; otherwise city's environmental and ecological balance will certainly fall in peril in future. For this, a replantation scheme covering the foothill areas may improve the existing condition. Further, any development activities in these areas should be environmentally as well as ecologically viable and friendly. The development of green belt as envisaged in the Master Plan as well as in the Development Plan needs immediate implementation on priority basis along the major roads and in peripheral areas. It will improve aesthetic beauty as well as ecological balance of the city.

### **Conclusion**

Land use problems and issues in Alwar city can be mitigated through inculcating suitable modifications in the Master plan incorporating peoples' needs. Land use planning strategy should include expansion of city boundary, bulk acquisition of urban land, hierarchical cellular structure of planning units, restructuring of planning zones based on socio-economic and historical factors, GIS based mapping of urban land and functions, and Need of Community. Various components of Master plans like residential, commercial, mixed and industrial land uses, transport planning etc. can be modified for timely execution of Master Plan. Besides, proposals for other related issues including urban slums, planning for historical sites and places, urban environmental problems and planning should also be incorporated in comprehensive Master Plan. The role of local community in outlining development plans including rehabilitation, renewal, and up-gradation programmes for the

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inner part, and in process of land acquisition for further growth and development in outer areas must be ensured. This will help in mitigation of development conflicts arising during the execution of the various plans. During formal interviews, each section of the urban society has come up with their own specific problems and interests. Here, the role of planning authorities should be to synchronise all problems into coherent development plans while satisfying needs of the society. But, formal interviews also surfaced out the incapability of harmonization and bias of the planning authorities, while sketching development plans. Hence, proper training of planning authorities in this direction is of utmost importance for planning process. A monitoring committee consisting of local community should also be set up for regular monitoring and implementation of different development plans. Further, participation of local community decreases the possibility of corruption and bribery and any modification in plans favouring interest of particular person or section of the society. Hence, people's awareness and their active participation is very much required for success of urban planning ensuring sustainable development of the city.

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