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SPATIAL ANALYSIS OF LAND USE IN MYSORE CITY

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ABSTRACT

The urban land use is an outcome of geographical and socio economic factors by man over the decades. Hence spatial information on land use and possibilities for optional use is essential for the selection, planning and implementation to meet the increasing the demands for human needs and welfare of the urban area. This information assists in monitoring the land use resulting out of charging demands of increasing urban population over the decades. So in this article a detailed work on urban land use pattern in Mysore city is analyzed. An attempt has bee made to study the status of urban land use of Mysore city during 1995 to 2011 with a view to detect the changes on land utilization rate that has taken place in this status particularly in the built-up land. The set of measures taken by the city corporation to contain problem is highlighted on extremely bothering the existing land use in Mysore city.

KEYWORDS

Predominantly, Designated, Conspicuously, Barrier, Tenure.

INTRODUCTION

he land use pattern of a region is an outcome of natural and socio-economic factors and their utilization by man in time space over the decades in the urban area of Mysore. The land is becoming a scarce resource due to immense agricultural demographic pressure and human activities. Hence, information on land use and possibilities for their optimal use is essential for the selection, planning and implementation of land use schemes to meet the increasing demands for basic human needs and welfare of the urban people. This information assists in monitoring the dynamics of land use resulting out of changing demands of increasing population over the decades in Mysore city.

The may be classified into natural and manmade. This natural environment is such as, forest, hills, slope, soil, and mountain, water etc., but the man made environment such as housing, roads for transportation, industrial, public and semi public, agricultural land etc. By this we can calculate the area on percentage based on usage of earth cover on the surface of their classification and land use.

OBJECTIVES

- 1. To know the existing land use in Mysore city.
- 2. To know the future land use pattern of Mysore city

STUDY AREA

The city Mysore is Saucer in a secular shaped basin with chamundi hills as a majestic backdrop. The city is spread over an area of 962.61 kms with a total population of 7,85,800 peprsons as per 2001 census in the city area. It occupies an important location in the larger regional context and only 140 km away from Bangalore, the Capital of the Karnataka State. The latitudinal and longitudinal co-ordinates of location area 12 18' N and 76 42' E. The purpose of the chapter is to provide a profile land use in Mysore city.

SRIRANGAPATNA MANTGAHALLI

ADMINISTRATIVE UNITS

MYSORE

MYSORE

MAP 1: STUDY AREA

LAND USES OF MYSORE CITY

All land uses, irrespective of their type generate traffic and by doing so stimulate transport development. The purpose here I how the land uses relate to transport and traffic development.

The general land use pattern of Mysore city owes its origin to its past when its importance was overstressed as the city of the Maharaja and the cultural centre of the erstwhile princely state. The existing land use characteristics in the city exhibit two distinctive patterns.

- a) specific or land uses:
- b) Mixed land uses

The defined or specific land use in the outcome of post city planning exercise which confines to newly developed areas. The old city at the central part of the built up area has missed land uses. The newly developing areas are to the north, along with the Mysore – Bangalore road, Hunsur road and K.R.S road and to the south along the Nanjanagud road. Although mixed developments have occurred throughout the city, some predominate land use patterns can be effortlessly identified.

The old city is predominantly the Central business district, which scattered around the palace and it is also the heart of the city. This area has an acute concentration of retail and wholesale trade, officers, hosiery industries, show rooms, electronic items and commercial entertainments. These activities are spared over long the entire length of the Sayyaji Rao road, Deveraj Urs road and Ashoka, Danavantri and K.T.Street. The concentration of commercial an activity is found at V.V. Mohalla, N.R.Mohalla, K.R.Mohalla and Chamaraj Mohalla.

The north and southwestern part of the city abetting the Shivamoga, Mangalore and Bangalore road and Nanjanagud-Bangalore railway line is predominantly developed for industrial concentration. Though the residential areas are dispersed all over the city, in Devaraja, Krishnaraja, Chamaraja and Chamundeswari Mohallas on the western part of city, another concentration of residential activities can be observed in Lashkar Mohalla, Nazarbad, Fort Mohalla and Kille Mohalla.

Urban development to the southeast of the city is conspicuously restricted by the Chamundi Hills which acts as a physical barrier and a smaller part has been developed after 2000. Some of the new layouts have established the existing land uses analysis in the development of Mysore City (2001).

TABLE	1 · I	VNID	LICEC	OE T	шЕ	CITV

Category	1995		2001		2011	
	Area in Hectares	Percentage	Area in Hectares	Percentage	Area in Hectares (proposed)	Percentage (proposed)
Residential	3057.30	40.4	284991	39.9	6097.87	43.45
Commercial	182.23	2.41	215.95	3.02	344.07	2.45
Industrial	1021.01	13.4	962.61	13.48	1855.05	13.22
Park and Open Spaces	415.77	5.49	981.07	13.74	1055.05	7.52
Public and semipublic	856.45	11.32	639.69	8.96	1180.78	8.41
Transport and communication	1530.73	20.22	1150.27	16.1	2380.56	16.96
Public utility	37.26	0.49	36.48	0.51	43.35	0.37
Water sheet	182.68	2.41	143.99	2.02	178.95	1.27
Agriculture	285.34	3.73	162.33	2.27	8989\.99	6.47
Nehry Loka	-	-	2078.14	-	1634.82	=
Total	7568.77	100	9221.07	100	15669.49	100

RESIDENTIAL LAND USES

One of the most important space consuming uses of the city area is the residential use. The various factors that influence the development of land for urban purposes can be identified as follows. The land value is the first major factor. The second factor is to cope up to the additional population either in the existing areas or in the new residential developments. Thirdly, the accessibility or inaccessibility of an area would either favorably or adversely affect the land use. Fourthly, the amenity factors involving which sewage facilities or potable water can be brought to an area will decide whether or not an area will become residential area. Fifthly, the topographic characteristics of the area will determine the cost involved in making an area in habitable. Finally, the historical factor starts the nucleus of a settlement and direct growth. Thus, the elements on which greater focus will be laid on the urban spaces and the people live in it.

A residential land begins as a low density residential land but with the passage of time the density increasing to a certain extent. It is postulated that, when the density reaches a critical point, the population begins migrate to suburban area place. Or when a city becomes spatially to a certain size, new nuclei begin springing up in the form of satellite towns and other developments.

The residential area was 40 percent in the year 1995 (3057.30 ha). Some of the residential areas came up during this time. The Mysore Urban Development Authority had allotted sites for the citizens. Even some of the private land developers had developed agricultural land into residential area. Nearly 168 Cooperative societies developed agricultural land to residential land. This is a boon time for the real estate business, some I.T. industries were established in Mysore such as INFOSYS and WIPRO, SPI and COMAT.

COMMERCIAL LAND USES

Another important aspect of land use is the study of commercial land which acts as the verve centre of an urban area. As the population of an urban centre increases, there would be a corresponding increase if the land devoted to commercial purpose. This will be done either by an increase if the net area devoted for commercial purpose or by intensifying the use in the existing area.

As pointed out earlier, in the Indian urban context, there is no purely commercial area as understood in the Western countries. Indeed, it is debatable whether anything such as the Central Business District exists in the medium-sized cities of India. Structures are devoted to commercial land and it varies greatly but a maximum of 75 percent is reached in about a block of 16 hectares. This is found mostly in the central part of the Central Business District (CBD). Adjacent to this, 50 percent commercial land and 25 per cent residential areas exist. Most often there is no discrete commercial block but a zone transition occurs in residential areas along with the main roads.

Since population is a necessary prerequisite, the size of the commercial area depends on the population and secondarily the area occupied the residential users. Fiver per cent of the residential area is usually devoted for commercial purposes and about 3.0 per cent for the city as a whole. In India, however, retail shops (disregarding the quality) can be regarded as ubiquitous because of the minimum requirement of facilities and ease of improvement of any small structure into a retail commercial establishment. This ubiquitous distribution on many occasions masks their presence and they do not appear prominently.

The central parts of Mysore have the present form due to the growth in years prior to 1990 and during 1990-2000. With an addition of 200,000 population in ten years, the central city has not been able to accommodate this growth and demand for space, mainly because only two sides of one street and one side of another street were designated as business precincts. Spaces in between the streets were essentially residential structures with tiled roofs and not in very good structural condition. The commercial land was 182.23 ha (2.4 per cent) in 1995 which increased to 215.95 ha and to 3.02 per cent in 2001. These have been represented by map no.2.

In this period, the residential main road was converted into commercial around the city. Some of them are Chamraja Double Road and Applow Hospital Road, Vontikoppalu Main Road, Terission college main road. For the next decade, the proposed land use will be 2.45 per cent 344.07 ha there will be slight decrease in the commercial lands, because all the main roads will be converted into commercial activities, but due to increase in the residential land use all the main roads cannot be converted into residential, so only few commercial activities are found in new residential layouts.

Concurrently, there was another move on land use in the northern part of the city. While in Ashoka, Santhepet, Devaraj Urs and Sayyaji Rao roads were used for both retail as well as wholesale markets of all sorts and began to develop certain specialized due to the migration of retail trade to another parallel road and migration of wholesale grains to an area near the railway station. This road retained whole of this area started general trade area.

Thus it is concluded that the expansion of the commercial area is due to the increase of population and also due to the expansion of the residential area whereas the slight shift is a function of altered population distribution.

Thus the study of commercial structure over a period of time shows that the spatial distribution is a function of total accessibilities population density, characteristics of population, the availability of space and government regulations.

INDUSTRIAL LAND USES

As mentioned earlier, most industries in the city of Mysore owed their existence to the rule supplying them a good part of their products and services. This naturally ruled out a balanced industrial development needed for a medium sized city and led to the dependence of the industries on the continued royal and court patronage. These industries which were geared to supply a limited clientele provided a relatively stable economic base until the time of drastic political changes that took place during the late 1940s.

These industries were in existence in the year 1941. The subsequent urban development has changed the spatial relationships of the industrial land both inside and outside the city. Firstly, as these industries developed, they provided more employment and residential colonies for the labor began to spring up adjacent to the factories in the vacant lands either by design or due to convenience. The railway workshop provides residential quarters for about 50 per cent of workers and the sandalwood oil factory has also its own workers colony.

The expansion has been discontinuous both in terms of space and time. After initial industrial development prior to 1941, there was a long break and the second phase of development started only 1961.

During the 1980s only a few industries were started such as the Vikrant Tyres, Lac and paints and Chamundi Machine Tools. During 1995, about 1021 ha of land (13.4 per cent) was given to the industries at the Hebbal industrial area and industrial suburbs near J.P. Nagar, Later in 2001, industrial tenure has increased to 13.48 per cent (1962.61) from 13.4 per cent in 1991 due to the establishment of major industries such as the TVS, Mafatlal and some of the major industries of information technologies were given importance by the liberalization of government policies and the expansion of the Vikrant Tyres and the BEML.

In 2011, the proposed land for the major IT industries will have come into existence and the land tenure will come to 13.48 percent (1855.05ha). But at this time only information technology industries will needs few land parcels and may indeed make use of all the land.

What is transparent in the proposed land use is that there will decrease in industrial land because of the conversation of industrial lands to residential and information technology corridors outside the city area. The industrial land will decrease to 13.72 per cent from 13.48 per cent.

PUBLIC UTILITY

Mysore city has a number of palaces owned by the royal family members. Among the four bigger palaces, the main one where the former Maharaja family lives is in the centre, which is indeed the world famous Mysore palace. This is the palace illuminated during the Dasara season. This is located in the peripheral areas on higher elevation than the rest of the city providing commonly a scenic vies. The palaces have extensive gardens and vacant lands amounting to 50 ha surrounding each of the palaces. After 1950, a part of the palace land has been converted into the bus stand in the 1960s and another part of the palace land has been given to government for the department of Horticulture.

During the 1970s, the land was 0.49 percent 93726 ha) but some of the palace lands were utilized for temples and a small place alone left for the public utility. Later in 2001, the palace and surrounding land increased to 0.51 percent or 36.48 ha of land has from 0.49 percent of land 937.26 ha). In a similar manner, there was decease of public land to 0.37 percent 943.35 ha). Some of those lands were converted into commercial buildings or sheds to attract tourists and a part has utilized for public temples and parking spaces.

WATER SHEET

Mysore city in considered as one of the rich hertage sites having religious, tourism and ecological importance. It has a catchment for Karanjikere, Dalvoykere, Goblikere, Uthanahallykere, Devikere, Kukkarhallikere, Hebbalkere and the Lingabudikere.

It has rich bio-diversity with 450 plant species of which about 50 are medical plants, 145 species of birds and 60 species of butterflies. The Karanjikere is the habitat of a large number of migratory and resident birds in addition to tourist destination.

Almost all the lakes in Mysore have 182.68 ha of land in 1991 which consists of 3.73 per cent of the land. But during 2001, it was reduced to 2.02 per cent because some of the lakes were desilted or reduced to 50 per cent of the existing land. The Kukkarahalli kere were reduced by 30 per cent by creating a walk way to people to walk along it, a part is also created as a park. The Karanjikere was reduced due to creation of the Butterfly Park and a garden to attract tourists and the small parties also utilized it for parking also. During 2011 the water bodies will be reduced further to 1.27 per cent (178.95 ha). The existing lakes will be converted as the tourist parks for entrainment. It will be further reduced in the future.

CHAMUNDI HILL

Chamundi hills are a unique landmark of Mysore city and also considered as one of the rich heritage sites, having religious tourism and ecological importance. It acts as the catchments for the more than ten lakes in the city area. Out of 20-78.14 ha of land about 613 ha is under the Forest Department "Reserve Forest" of 404 ha as private land and about 995 ha is termed as the public and other government lands. The proposed denotification of the Chamundi hills as Nehru Loka (National Park) should be shelved to continue it as green belt and for planned development of a tree park.

During the year 2001, they have demarcated 2078.14 ha but 1634.82 ha of land will be reduced to 9.68 per cent. Some of the lands have been occupied by the Adhichunchanagiri Mutt, Suttur Mutt, Ayappa Swamy Temple, crematorium, parking place for Lorries, SDM and the Government sUIVey training centre. But it will be further reduced by the encroachment of the land by the private people and the mutts of different communities for their own land some of the education institutions have come into existence.

PUBLIC AND SEMI-PUBLIC

The city of Mysore has an unusually high proportion of the land devoted to public and semi-public places. Several factors have contributed to this distinguishing feature, but the main ones among them are educational institutions, nursing, teacher training institutes, primary and high schools, Karnataka government officers, Central government offices, corporation, public sector insists of state and central.

These several types of institutions in the city and they can be arranged hierarchically with regard to their importance and their space requirements. During 1950-60, the Government institutions were established in Mysore such as the Maharaja Government College, JSS aided institutions, Marimallappa's College and also divisional offices of the State government were established. In 1995, the land use for public and semi-public was 856.45 ha (11.32 per cent). After 2001, so many educational institutions were established. The land used for this purpose was 639.69 has of about 8.96 per cent. Some of the institutions were the Vidyavardhaka Institute of Technology, Vidya Vikasa, Fooriqua Dental College, GSS Institute of Technology; the Government established three first grade

colleges, Maharaja Institute of Technology and Srimatha Polytechnic. Some of the educational training institutes are the Chayadevi Trust, Kaginele Trust, Mahajana Education Trust and Amruthamai Trust. The research institutions are Central Institute of Indian Languages, CFTRI, University of Mysore, Kamataka State Open University, Central Sericulture Board, Anthropological Survey of India and Reserve Bank of India. For the next decade 2001-2011, the public and semi-public land has slightly decreased to 8.41 per cent (1180.78 ha). It includes the space left for the Dasara activities such as the exhibition, flower show and torch light parade.

EDUCATIONAL LAND USES

The city of Mysore has an unusually high proportion of land devoted to the educational uses. In the days when college education was started in India by the British, attention was devoted to the British held cities and not to the cities that were controlled by the local Princes. As a consequence, the British-held cantonment part of Bangalore had a college; but the part which was under the rule of Maharaja of Mysore did not initially have any colleges.

The Maharaja of Mysore, however, wanted the City of Mysore to have a University in pursuance of his wish a University and colleges was established, this became the nucleus around which the higher education in the entire state was based. This governmental support for higher education created a base and the development of land for educational uses began. This has ushered in a period of development catering to the needs of educational institutions.

The spatial structure of land values induced the high schools to be located near the periphery. In contrast to the primary schools, the high schools are less in number but occupy extensive land in low-density areas of lower land value. Thus, the high schools are near the newly developing residential areas also. These peripheral high schools gradually become surrounded by the new residential and other uses and this process can be termed as *Process of envelopment* as pointed out earlier with regard to industrial uses. During subsequent time periods, more developments take place with new schools and educational institutions, technical, professional, medical, dental and law becoming established on the then-existing periphery and again the same process is repeated.

The conversion from residential use to educational use on a large scale is probably peculiar to Mysore City. But in a princely city with political changes, it is not entirely unpredictable because, if they had not been converted into museum or luxury hotels for tourists or government offices.

During the 1980s only a few institutions were existing. But due to increase in population and migration, the institutions increased in number over the years.

PARK AND OPEN SPACES

Mysore city is also known as the 'Garden city'. It has been observed that the succession of vegetation and plant species for the last 45 years and happy to note that there is a remarkable improvement in the growth of various plant species towards Mysore city. During 5.49 per cent (415-77 ha) of the land was demarcated for the parks and open spaces. Some of the parks are freedom fighters park in front of the Shanthala Theatre, Vishwamanava Park near JSS Administrative Office, People's Park near suburban bus stand, Vivekananda Park at Vontikoppal, Shivaji Park at N.R. Mohalla, Miland Park at Ashok Road, open spaces are the Doddakere Maidan in Nazarbad, Eidgh Maidan at Bamboo Bazar and open spaces after old Jawa Factory.

But during 2001, 13.75 per cent of land is utilized for this purpose (639.69 halo It has come down to 2.36 per cent because some of the open spaces were utilized for other purposes such as the private bus stand in old APMC market, parking and play ground of the Doddakere Maidan and swimming pool at the freedom fighters park near the Ursu boarding school.

The construction of the Hopcoms (Horticulture producer's co-operative marketing society) vegetable / fruits stalls at important parks in the residential area of the city. In a similar manner, some part of the parks is utilized for the public libraries.

During the time some of the parks were renovated by JNNURM projects, such as Vontikoppal park, Sanjivini Park near Kamakshi hospital parks on Vishwamanava double road Ambedkar Park at Ashokapuram. During this time, the agricultural land has become converted to residential lands by the Mysore Urban Development Authority (MUDA). The layouts are Vijayanagar which is the largest area in the city and it includes hundreds of park in the residential area; the Kanakadasa Nagar near Datgalli is also having huge space left for parks.

LAND USE 1955

CLAND USE 2001

FIG L: REPRESENTS THE LAND USE PATTERN IN PERCENTAGE OF 1995, 2001 & 2011 & THEIR CLASSIFICATION.

The proposed land left for this purpose in 2011 has decreased to 7.52 per cent (1055. 05 halo There has been a decrease in 6.23 per cent of the open spaces, but when compared to 415.36 ha it is an increase of 74 ha. During this time the residential lands were given importance because some of the IT industries have entered Mysore, which created more demand for residential plots.

TRAFFIC AND TRANSPORTATION

In developing countries like India, traffic is unregulated and unplanned situation exists in Mysore for transportation. Therefore, there is need for developing traffic management, maintenance for the smooth flow of traffic.

The number of vehicles on the roads of Mysore city has increased to about 304,282 and there is a floating population of 7.6 per cent. The roads of Mysore city were planned for traffic in the earlier days during the Maharaja reign. Some of the roads which were planned are the Sayyaji Rao Road, Ashoka Road, Chamaraja Double Road, Madhava Rao Circle and K.R. Circle.

Later the roads were not properly planned for residential areas. In 1995, the land used for traffic and transportation was 20.22 per cent (1530.73 ha). During this period, some new residential layouts were allotted and there was an increase in the per cent of land under transport and some of the residential areas: Kuvempunagar, T.K. Layout, Bogadi, Alanahalli, Siddhiqui Mohalla, Shivarathrishwara Nagar and Vijayanagar. In these areas, one fifth of the land has been allotted to transportation. In 2001, the land use for transport has declined to 16.1 per cent (639.69 ha). There was a decline of about 2.82 per cent. The residential areas continue to increase when come to the prepared land use for 2011. It has further declined to 8.41 per cent (1180.78 ha) but it has increased by 349.95 ha. Due to the boom in the real estate, the city has established layouts by reducing some of the roads. But during this time the traffic and transportation will increase but the land for transport will decrease. For this period a new method of planning should be made such as multimode transport, flyover, and bye-

pass, straight roads which connect two different places Vasu Agarbatti Factory occupies a part of agricultural land and reduced the land area. This will lead to decrease in road lengths and traffic for the further decade.

AGRICULTURE

Only a small part of the land is left for agriculture in the city area. This is called the green belt area. These are found in a hotch-potch around the residential areas. Some of them are Jayanagar near crematorium, next to National Institute of Engineering, battle leaf plantation near Agrahara, a bit of land in Manasagangothri Gomala near Kesare and near Siddhiqi Nagar.

In 1995, the land under agriculture was 285.34 ha (3.73 per cent) but later in 2001 it was reduced to 2.27 per cent (143.99 ha). Some of these lands were converted into commercial as well as cultural features. Some of the converted lands of Jayanagar Swampy area converted to garage, opposite to National Institute of Engineering college lands were converted into paying guest hostels and preparation of concrete blocks, A part of agriculture land next to ashram of Sri Ganapathi Sachidananda has converted to small factory and go down by Vasu agarabathi factory. The agriculture land increased by urban forestry, while some of the government lands will be converted in to green land. By this, 1.27 per cent (898.99 ha) is used for agriculture and resorts. In the next generation the agriculture lands will be converted to resorts such as olive garden, roost and dabha.

FINDINGS

The land use of Mysore city is considered on the basis of the data adopted by the city corporation. It is based on report of 1995, 2001 and 2011 land uses. But for this I have not considered the land use of private land developers, tourism places, amusement parks, industrial estates/ parks created by the government from time to time.

By taking into consideration of these into account the urban land use, we can clearly notice that the residential layouts are increasing through the decades, while the water bodies, agricultural lands are reducing at a greater area. These lands are using for commercial purposes such as agricultural lands is converted to garages, restaurants etc. While parks in the urban area are used for constructing the temples, mosque, small choultaries, fruit stalls by (Hopcoms) and Nandini milk parlor etc in almost all the residential areas in the city. Some of the Government lands are used by the vegetable, fruit vendors such as Mahatma Gandhi road, opposite to police station in Sarswathipuram, constructed temporary shops along the Mysore-Bangalore highway etc.

The industrial area which is far away from the city is now converted into educational institutions such as the Geetha Shishana Samsthe, Maharaja Institute of technology etc is some of the examples.

The land used for transportation has also come down due to decrease in the land allotted for roads during this decade, while the density of vehicles has increased about 25 times. Apart from this the area left for roads has been acquired by the temples, street vendors, extended by the business people for display the materials, automobile show room, mobile urban kitchen etc in almost all the main roads of the city.

The Chamundi hill area which is situated in the Mysore is not free from these; the hill area of hundred acres is given to math such as Suthur Math, Adichunchanagiri Math etc. Even small temples, petrol bunk, small business, residential areas have acquired these areas of the Government land for their own uses which has made the changes in ecology of the forest area.

Once the city was having the commercial centre but nowadays each and every residential and industrial area has commercial activities. The commercial land use in the city has increased a lot due to economic development and IT. The business men and the traders has acquired the foot paths and neighboring places of the government

Such as the hoteliers used to occupy the foot path for serving, parking, business men for display the items etc. Vendors and street hawkers have acquired the city market and adjoining areas.

The educational institutions and hostels have also changed their attitude due to commercialization, the institutions have constructed the shops and arcade in their places. While some of them constructed the choultaries in their places. The Vidyavardhaka College in city, JSS College in Sarswathipuram, Basudev somani college. Kuvempunagar etc. is the best examples.

SUMMERY AND CONCLUSION

In this present paper, the land use was analyzed based on the pattern of 1995, 2001 and 2011 in Mysore city. Based on these records, we rmd that there is a decreasing trend in transport, industries, water sheet and Government land. But the city corporation is giving importance to residential activities rather than giving importance to the future plan by taking into consideration of private land developers and nearby towns. The land information in Mysore city appears to be inadequate and needs up gradation. Higher priority needs to be assigned to the management of land use in existing and the planning by the local authority. The local authority should appoint land use planners or specialized urban planners, transport planners, and needs for a development a proper coordination among the line departments for better planning and management. The planners in corporation and urban development authority officials have to look for better solution for providing sustainable urban development for the welfare of people in the city, which needs immediate attention from policy makers, planners, administrators and public for unless mitigation measures are adopted for the management of urban land use.

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