



THE LAND-USE PATTERN OF NIPPANI TOWN IN BELAGAVI DISTRICT: KARNATAKA STATE

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Abstract:

The impact of urban growth on urban environmental change has attracted attention from scholars in the field of urban studies, particularly in the study of land use and land cover change. This research focuses on the growing town of Nippani in Karnataka for analysis of land use/land cover changes over a period of 35 years. The results show that built-up land has increased, while other categories of land have decreased. The findings provide insight to planners and policy makers for urban land management in the area of issues related to urban growth.

Keywords: Urban growth, GIS, land use/land cover change

Introduction:

The study of land use described in terms of physical forms and arrangement of spaces and buildings that compose the urban landscape. The expansion of urban built-up area in the fringe in the present study, the process of changing the use of land are among the most dynamic spatial processes of urban growth. The land use patterns have been analyzed for a proper understanding of their morphology and planning problems. The land is important for a man, being a nature gift must be properly utilized for human existence and living. Man uses it for various purposes; it is predominantly used for agriculture, residents and secondary activities. The urban land use is a term which denotes urban area, land use of cities, including the area under water bodies in the cities and three-dimensional space about the surface of the city or land which can describe

urban. The post-urban studies have clearly revealed the broad geographical pattern of these functional areas and their characteristics. The development of urban area and its change is an interesting topic of research from various reasons and developed such as in related fields like Agriculture, economics, geography, ecology, sociology, and others, have been studied scientifically by scholars such as Burgers, Harris Ullaman, Fieny (1985). and others. The urban land use study, which gives the basic information, required for town planning, A detailed information regarding the use of which each category land is being put to use, is essential for the preparation of the master plan.

Review of Literature:

The study of land use of a city is important in understanding the character of

urban pattern. Different cities and towns have different category of land use. As cities and towns grow, the pattern in which the land to be used (Smiles A.R.E. 1960 PP-84). The study of land use described in terms of physical forms and arrangement of spaces and buildings that compose the urban landscape. The expansion of urban built up area up to the fringe and changing use of land is among the most dynamic spatial processes of urban growth. The land use patterns have been analysed for proper understanding of their morphology and planning problems.

Land is being a nature's gift must be properly utilized, for human existence and living. Man uses it for various purposes. It is predominantly used for agriculture, residence and secondary. Now a days with rapid development of science and technology, in addition to industrial revolution the process of urbanization has set in, resulting in other types of land use also (S. Kanthimati Marimal and K. S. Gopalkrishnan 1981).

The term land use denotes the multifaceted use of the land to study and to access the use and misuse of the land; one concept is that land use refers to the man activities on the land, which are directly related to the land. N.C. Gautam (1982) The important use of land in town or cities are residential, industrial, commercial, park and open spaces, government and semi-government, roads and railways, playgrounds, agriculture etc. The land use of town or city is interrelated with the population size and functions of town or city. There is more migration of population to urban centers in search of secondary and tertiary occupations. This results in urban expansion and has its bearing on urban land use. Land is in a continuous state of transformation because

of various natural and manmade processes. (Shahab Fazal 2001)

In India, many urban geographers have studied land use pattern of different towns and cities and also conducted urban land use survey and suggested for the improvement. Hunt A.G. (1951) had elaborated techniques and importance of land use survey in India. Sinha N (1965) made a plea for adoption of a national urban land policy in India. Jadhav and Kulakami (1967) suggested a systematic land use plan for rural urban fringe of Puna city. (Gosal G.S 1972 PP.272). E.Swaminathan and N. Muragan in their article 'An analysis of land uses and land values in salem city' made an attempt to study relationship between land use and land values in salem. S. Kantimati Marimal and Gopalkrishnan have attempted to evaluate dynamics of land use pattern and land values in Madurai city. Similar work related to changing land use pattern of different cities was made by different geographers. B.N.Sinha (1960) on Sirsi R.L.Singh (1964) on Bangalore, M.F. Kerennaver (1965) on Dharwad city, S.S. Naregal (1970) on Belgaum city, Hurakadli S.M (1990) on Raichur city, Shahab Fazal (2001) on Saharanapur city, S.M. Hurakadli and M.S. Kurani (2004) on Belgaum city are the important ones in the study of urban land use pattern.

Study Area:

Nippani is an important town in Belagavi district of Karnataka because of production of Tobacco and manufacturing Beedi. This is situated on the northwest side, easy fast accessibility to it through N. H. 4 (Belagavi to Kolhapur) road has led to urbanization of the town. Belagavi is the administrative headquarters of the Nippani town. Total geographical area of Nippani city municipal council is 20 km².

extending between $16^{\circ} 37' N$ to $16^{\circ} 42' N$ latitude and $74^{\circ} 36' E$ to $74^{\circ} 60' E$ longitude and its location 520 meters above the mean sea level(MSL), nearest railway station is Kolhapur which is 50km far from town, and distance of 77 form Belagavi city and 39 km from Kolhapur in Maharashtra State. Nippani close to the branches of the western ghats, it enjoys a good rainy season(863.01mm), temperature ranges from 18 to $42^{\circ} C$ (61to

$104^{\circ} C$) minimum and maximum temperature oblige.

Nippani town Population of 62,865 is Chikodi sub-district, and population density of the town is 3111 persons per sq. km. 31 wards in the town, No.06 in the most populous ward with a population of 3233 and ward no 23 is the least populous ward with a population of 944. The paper focuses on interpreting town land use change pattern and growth based on spatial and non-spatial data.

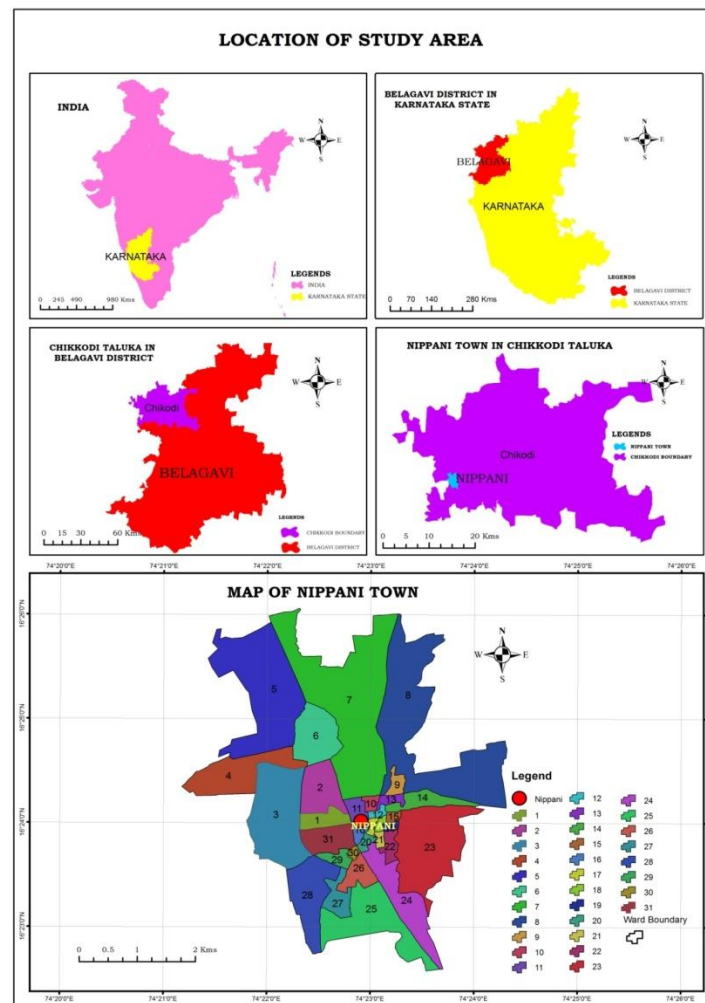


Fig.1

Methodology:

The present study is aims at to know the morphological structure and land use pattern of Nippani town. An attempt has been made in the present study to understand the morphological development of Nippani town, internal spatial structure of the city, theories of

urban morphology, various aspects of morphology Central Business District, Housing and industrial structure, existing land use pattern, dynamics of land use pattern and proposed land use pattern and changing nature of land values and other aspects are included in the study.

Since this study is purely based on city municipal council and census data, the study is based on field observation and survey for the analysis of morphological structure and land use pattern of the city. Two points of time have been chosen i.e. 1981-2011 for the detail ward wise analysis of urban growth and its morphology. The required data for present study have been obtained by both primary and secondary sources. The primary is collected through field observation and survey. The collected data have been classified, processed and presented in the form of charts, maps and graphs by applying cartographic skills. Burgess concentric model is discussed briefly on the back ground that the Belgaum city morphology.

Objective the Study:

1. To examine the growth of morphology and its changes in Nippani town
2. To assess and impact on the land use pattern in Nippani town

Existing Land Use Pattern of Nippani Town 2001-2011:

The study of land use is very useful for the future land use planning of large cities and towns. Moreover, it is one of the important aspects of urban geography. The

important land uses of the city are residential, industrial Commercial, Public and semi-public, Parks and playground, Railways and Roads, water bodies, Vacant land and agriculture etc are studied. The Existing Land Use survey was taken up during the year 2004-2006. The survey is done manually with the reference of existing landuse maps. The total development area is 402.02 sq. Hectares. In the present study the exiting landuse of Nippani town is explained for two points of time i.e. 2001 and 2011. Table No.1 explains that, the changing land use pattern in the study area.

During the decade of 2001 about 407 hectare of area is used for different purposes. Whereas during the decade 2011, the area under different categories of land use have been decreased mainly in the categories of residential, industrial area public utility area and agriculture. Due to ten utilisation of land in each category as compared to the decade of 2001, the available land indicates more in percentage that has been re-allocated other categories during 2011. The study reveals that, even though the area under each category showed large area during 2011. But the percentage o each category of land use varied as compared the decade of 2001.

Table No.1: Existing land use pattern of Nippani Town-2001-2011

S. No	Type Land Use	2001 Area In Hectare	Total Area (%)	2011 Area In Hectare	Total Area (%)	Decadal variation in %
1	Residential	165.78	40.73	188.73	34.44	-6.29
2	Commercial	45.34	11.14	41.47	7.57	-3.57
3	Industrial	6	1.47	43.16	7.88	6.41
4	Public & semi public	19.2	4.72	30.06	5.49	0.77
5	Parks & open space	12.78	3.14	32.33	5.90	2.76
6	Public utility	44.93	11.04	0.61	0.11	-10.93

7	Transport and Communication	89.72	22.04	163.87	29.91	7.87
8	Water sheet	2.5	0.61	29.13	5.32	4.70
9	Agriculture	20.75	5.1	18.6	3.39	-1.71
	Grand total	407	100	547.96	100.00	

Source :(City Municipal Council)

Figure No. 2: Categories of Land use pattern in percentage -2001-2011

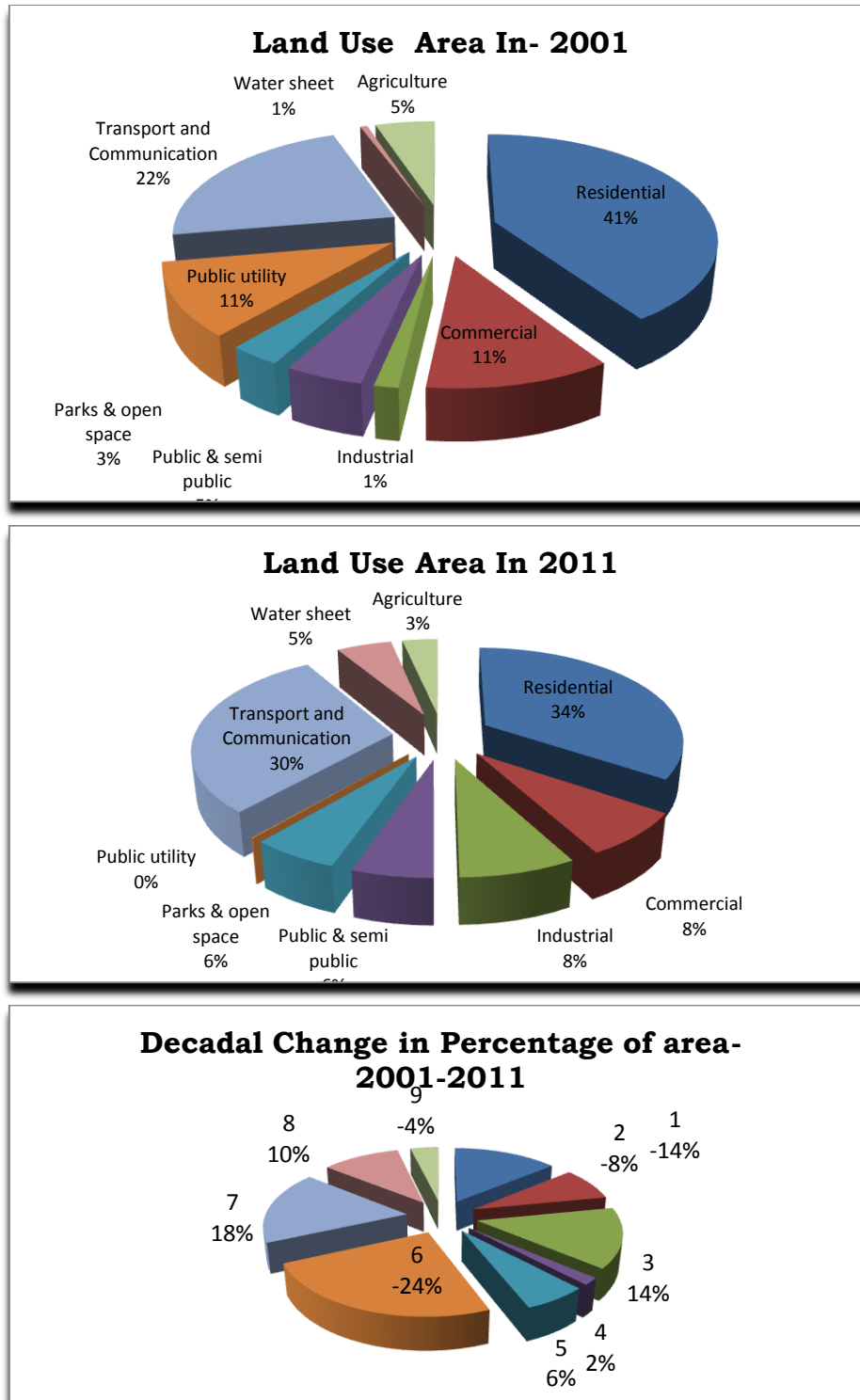


Table No.1 also explains the decadal variation of land use. Three are three categories mainly residential (-6.29%), commercial (-3.58%) and public utility (-10.93%) showed negative change it means decreased area of land whereas industrial (+6.40%), public and semi-public (0.76%), parks and open ground (+6.40%) and water sheet (4.70%) etc, have shown increase in area under land use in the study area. This was mainly due to expansion of urban area in the study.

1. The Residence:

The area under residence in the town represents about the residential density in town presents the lowest density in 2001 census the 165.78 hectares (40.73%) of the total land during 2001. It is observed highest density about 98 persons per hectare. It is clear from the above analysis that the density is more in the heart of the city performing different activities and it has gradually decreasing towards the outskirts of the town.

Whereas the area under existing residential area of the town was about 188.73 heater, which accounts for 37.44 percent of the total developed area 2011 during this decade most of the new residential developmental particularly in the Eastern and Northern part of the town/city.

2. Commercial:

Commercial centre the commercial activity in Nippani town is concentrated only in that old town. There are many retail and wholesale business units are established. Moreover, APMC is functioning in the town/city the main commodities transported are tobacco jaggery and groundnut. The weekly Sandy day is on Thursday. There are 4 cinema theatres. There are quite a good number of banks. Cooperative banks functioning in the town/city. In addition to this private

finance, Agencies also exist in the town/city. The area under commercial zone occupied about 45.34 hectares and it amounts to of the total developed area, which is considerably High when compared to other similar towns/city. This is a clear study that, the town experiences more popular commercial importance the town in during 2001.

Whereas during the decade of 2011, the existing commercial area of the city is 41.47 hectare (8.29%) of the total developed area. The central business area is located in the old part of the city in planning division No.3. Apart from this, the commercial complexes and shops have come up along the main roads. The APMC yard is located along the Akkol road is one of the major commercial activity of Nippani town. The main commodities transported are groundnut and Tobacco. The weekly Sandy day is happening on Thursday. Three theatres and number of commercial & co-operative banks functions are existed in the commercial area, along bothsides of Chikodi road and Old P.B. Road, many of the commercial buildings have come up during the decade of 2011.

3. Industrial:

Nippani is quite rich in growing to tobacco, sugar cane, and Nippani can be considered as the only town tobacco and which now processing centres in the state. Tobacco is used mainly in the manufacture of beedies only. One sugar mill exists nearby in the Yamagarni village along National Highway towards Kolhapur side. There are two oil Mills. 36 tobacco-processing units. The industrial area is 6.00 hectares, and its share was 1.56 per cent of the total developed area during 2001.

Nippani town is quite rich in the agriculture & having a good scope for

industrial development especially in agro-based industries. Tobacco, Groundnut, and Sugarcane are growing in large quantities in surrounding villages. Beedi industries existed around the town/city. There is a sugar factory in Yamagarni village very close to the city. The existing industrial area of the town was 43.16 hectare which and its share was about 8.63 percent of the total developed area in the town during 2011.

4. Public and Semi-Public:

Many of the government offices located in various parts of the town/city are a house in private rented buildings. There is one bus stand, one KSRTC bus depot. In Nippani the educational institutions are existing in the old area are along the old National Highway. Primary and higher primary schools i.e. located in the old town/city area. There is an agricultural Research Centre existing along Ponda road. And PWD offices are located in Travellers bungalow premises in the middle of the town/city along old NH4. The government mental hospital is existing at the entrance of the town along the national highway bypass and other like T.B hospital by the side, of long National Highway, Court also exist the APMC area, in addition Milk cold storage facility is also available in the City. The area under public and semipublic use was about 19.20 hectares and its share amounts to 5.0 percent of the total developed area during 2001.

The existing public & semi-public are an area of the town is was about 30.06 hectares which contributor about 6.01 percent of the total developed area. This includes Government and quasi Government institution, religious & cultural centers. Many of the offices are functioning now in private buildings. Govt. offices are facing acute shortages of

accommodation. The major share of this public area is occupied by Govt. hospital, G.I. Bagewadi College, P.W.D. Inspection Bungalow, Police station, K.L.E. Pharmacy College, Municipal High school, and V.S.M. Highschool developed in during the decade of 2011.

5. Parks, Playgrounds, And Open Spaces:

The only longue space in Nippani is in front of municipal High School. The Schools have Open Spaces for playing. There is 14 organised small parks. The area under Park playground and Open Spaces is around 12.78 hectares and its percentage was about 3.14 percent. As a result, it could be analysed that, the town suffering lakhs of parks and Open Spaces in 2001 decade.

Whereas the existing parks, playgrounds & open spaces area increased to 32.33 hectares and it which is shape was about 5.90 percent of the total developed area. So far, no efforts have been made by the local authority committee to develop a park areas provided in the private layouts in during 2011.

6. Transportation:

There are two Highways passing through the city, out of that, one in the middle of the town another one is outside the town i.e. National Highway. Two important roads are there i.e. One is Nippani and Chikodi road another one is Nippani to Ponda Road. There is only one bus stand and a depot attached to it. Most of the roads in the old area in the town are narrow. The lane in the old town from 4 to 6 metre in width. In the city, there is not much scope of the widening of roads, since the industrial houses are very close to one another. However, redevelopment has been planned for certain areas of the old town to provide better accessibility and Civic amenities. The area under

transportation was about 89.72 hectares, which of the total developed area.

The existing Transport & Communication use area of the city is 163.87 hectares, which accounts to 32.76 percent of the total developed area. The NWKRTC bus Stand is situated at the core of the town. The lorry parking has been provided in the APMC Yard. Most of the internal roads in the city are narrow. This

needs the sum of improvements to make easy, the present traffic within the town. The existing Transport & Communication use area of the city is as about 163.87 hectares, (32.76%) of the total developed area. The NWKRTC Bus Stand is situated at the core of the town/city. Most of the internal roads in the city are narrow. This needs the sum of improvements to make easy, the present traffic within the town.

Existing Land Use Pattern of Nippani Town-2001-2011

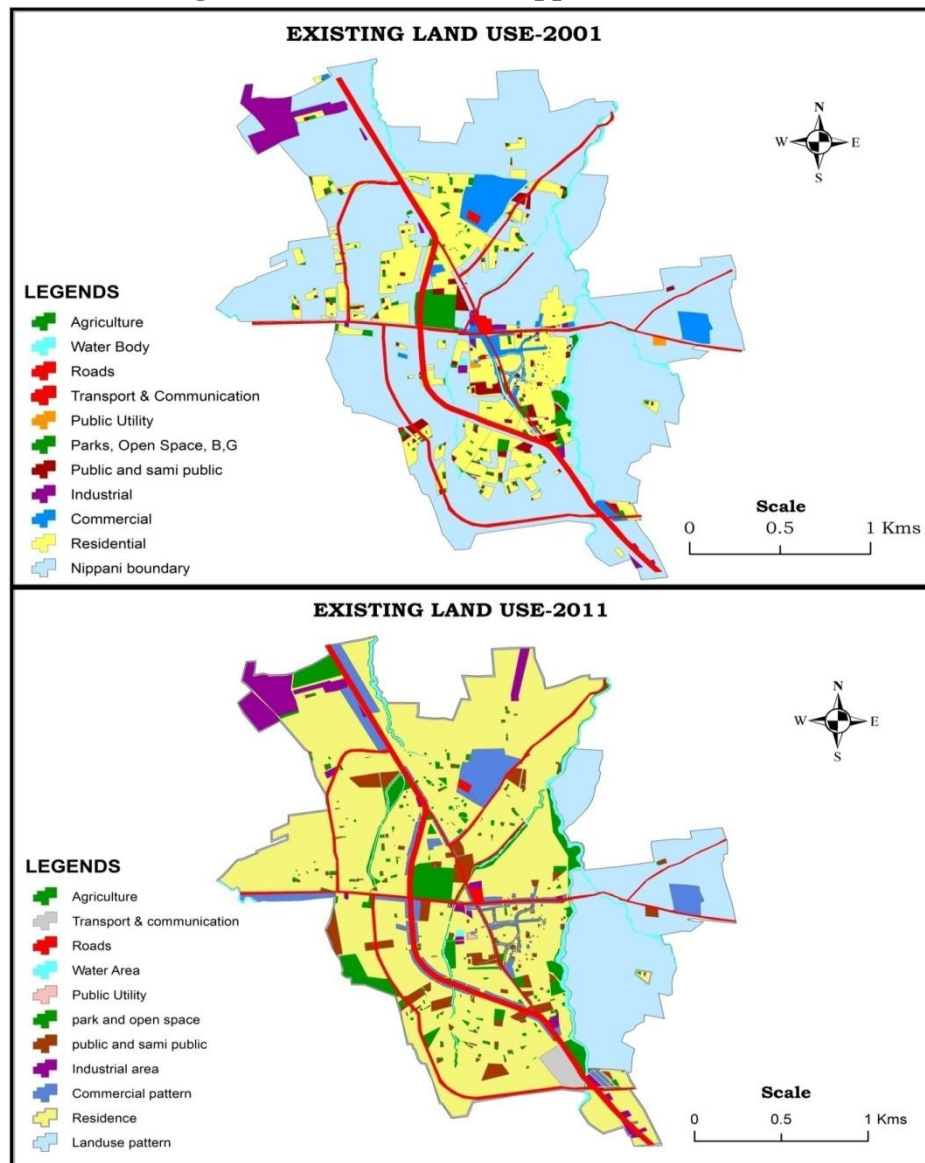


Fig.3

7. Public Utility:

The area under public utility is necessary, as such, it occupies about 44.93 hectares (11.04%) during 2001. Whereas

the existing public utility area was tremendously decreased to 0.61 hectares (11.00%) of the total developed area. This

was mainly done to the area help for one purpose of public utility in the town.

8. Water Sheet:

There is the underwater sheet covers an area about 2.50 hectares. The Nippani town/city has a water supply from the Gackwell provided on the Doodaganga River; sufficient water is available for the city.

9. Agriculture:

The area under this category of land is quite rich and growth food, cash, pulses crops and in addition variety of vegetables are grown. The dominant crops growth in this area are , tobacco, sugarcane, pulses and all vegetables. The agriculture area occupies 2075 hectares (5.09%) of the total development area during 2001 and it has decreased to 18.60 hectares (3.39%) of total developed area during the decade of 2011. This reduction was mainly responsible for, establishment of industrial area, opening of ports and godowns and transportation facilities within the city. (table No.3.2)

Proposed Landuse of Nippani Town-2021:

Nippani city is growing year by year due to increase in the by your due to increase in the size of population. The existing land use pattern explains clearly that, the city is expanding in all direction. Due to this the development plan for Nippani town was finally proposed by the Govt. as per the section 13 of the KTCP act-1961 during the year 2003. This plan was prepared based on the surveys conducted during 1996 and the master Plan-I is to be prepared, keeping in view the proposal made in the outline development plan. The Master plan-I shall

consist a series of maps and documents indicating the manner in which the town is improving in it's size, infrastructure and development within the jurisdiction of the Nippani town. The proposed Master plan shall include the type and catagories of land use, they are as follows.

- a. A comprehensive zoning of land use for the planning area together with zoning regulation.
- b. Road pattern, indicating the major & minor road, state highway & traffic circulation pattern for meeting immediate & future requirements.
- c. Area reserved for parks, playgrounds & other recreational uses, open spaces, public building,& institution areas reserved for such other purpose may be expedient for new civic improvements.
- d. Major road improvements.
- e. Areas for new housing.
- f. New areas earmarked for future development & expansion.
- g. The stage by which the plan is to be carried out.

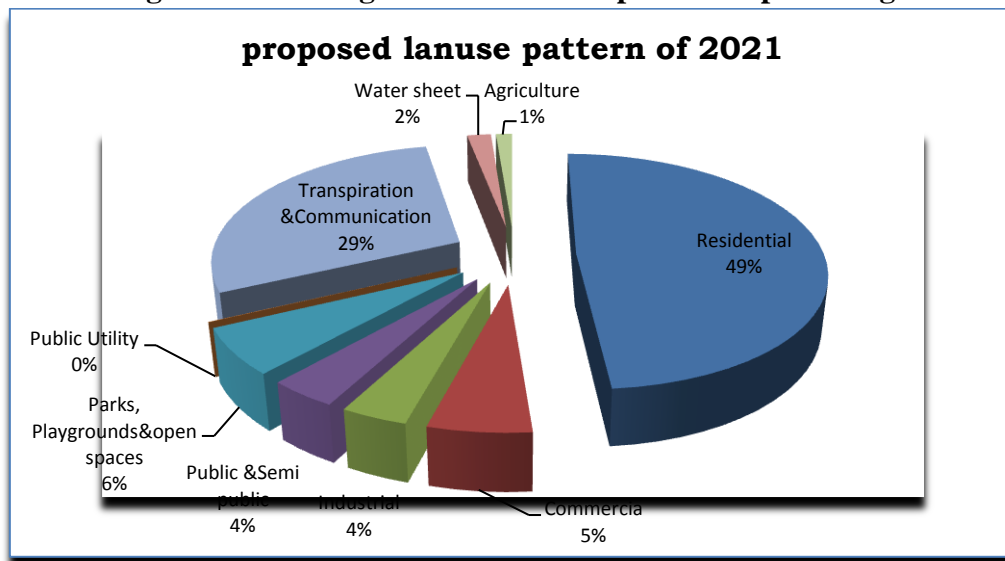
In view of this, the proposed plan of development of revised and revised on the assessment of existing realities will be included in the next coming decade of 2021 proposed plan of land use of Nippani town.

1. Population projection.
2. Improvement in the Present land use in and development of planning area.
3. Based on the indicators proper plan for development of the area.
4. under improvement in updating the facilities of civic amenities, facilities of and services.
5. Density of population etc.

Table No 2: Proposed Land Use Analysis -2021

Sl.No.	Land use category	Area in	Percentage
1	Residential	731.21	48.66
2	Commercial	84.21	5.60
3	Industrial	54.5	3.63
4	Public & Semi public	57.05	3.80
5	Parks, Playgrounds & open spaces	93.99	6.25
6	Public Utility	0.61	0.04
7	Transpiration & Communication	435.19	28.96
8	Water sheet	27.45	1.83
9	Agriculture	18.6	1.24
	Grand Total	1,502.81	100

Source :(City Municipal Council)

Figure No. 4 Categories of Land use pattern in percentage

1. Residential:

The existing residential area which was developed area during 2011 in the city was about 88.73 hectare (36.61%). With residential density of 116 persons per hectors. Whereas the Nippani town will have a residential area of about 731.21 hectares (48.65%) in the proposed plan of 2021. Which will give facility for large number of people who are staying in Nippani town.

Table.2 explains the proposed land use in Nippani town. The study reveals that, the proposed land will be 1502.81 hectors by 2021, it is clear from the from the table No.3 that, out of the total land area proposed the in internal structure of each of each categories of land use have showed increased area in the proposed plan. The share of residential will have 731.21 hectare (50.19%) of the total developed area. whereas commercial area

will be increased to 84.21 hectares (3.74%) it is followed by public and semi-public will be increased to 57.05 hectares (3.92%), parks and play grounds will also increased tremendously covers on area about 93.99 hectares (6.45%). The public utility has given less importance that, will be strengthened, which covers 0.61 hectares (0.04%), transport and communication will be increased to 435.19 hectares (29.98%), water sheet covers 27.45 hectares (1.82%) and agriculture area completely will come down and covered area will be 18.60 hectares (1.23%) of the total developed area in the town. (Table No.2)

2. Commercial:

The Nippani city has been considered as an important trade center in the broader area of Belagavi district. At present the in the existing area was about 41.47 hectare. Is under commercial use. The important trade centers are mainly A.P.M.C yard and some of the commercial complexes & shops in the old part of the city are the major commercial uses. In the proposed plan 2021 the area under commercial land will increase up to 84.21 hectares (5.60), which will be used for construction of complexes of trade centers in the city. The designated for commercial purposes is 84.21 hectare, which accounts to 5.78% of the total area including the existing commercial area. This is quite sufficient for the projected population for the year 2021

3. Industrial:

The ultimate goal of planning is to achieve a better standard of living through an optimum utilization of economic resources. Nippani town is primarily an Industrial cum trade center. Halasiddanath Sugar Factory running within CMC limit at Yamagarni, Aluminum utensils factory running in the town at Mangalwar pet

road. The area under this category was 43.16 hectares (7.87%) during 2011. In the purpose industrial area will be 54.50 hectares (3.62%) of the total developed area in the town.

4. Public & Semi Public:

This includes Govt. institution, religion & cultural centers. Many of the offices, which are running non and functioning in private rented buildings. Govt. offices are facing acute shortages of accommodation. The major share of this public area is occupied under Govt. hospital, G.I. Bagewadi College, P.W.D. Inspection Bungalow, Police station, K.L.E. Pharmacy College, Municipal High school and V.S.M. Highschool the area under Public and Semipublic was about 30.06 hectares (5.48%) during 2011. In the purpose plan this category of land will be increased to 57.05 hectares (3.79%) of the total developed area.

5. Parks, Play Grounds & Open Spaces:

During 2011 the existing area under this category was about is 32.33 hectare. (5.90%) this proportion of land kept for the purpose of parks, playgrounds & other open spaces in the town was very less compared to the size of population. But in the proposed plan of 2021, the area under this category will be 93.99 hectare (6.25%) with will be increased a intention to create good environment for the people. It is therefore in the proposed plan the land is reserved for the development of this category of land use.

6. Transport & Communication:

The Nippani town has good regional Transportation facilities. The Poona-Bangalore National Highway passes within the town has been diverted outside now, which is very useful to the transportation purpose. The Chikodi-Ponda State Highway passes through the town across the National Highway. The

passenger traffic mainly met by N.W.K.R.T.C. Nippani and by the private taxicabs and minibus. The Bus stand area is located at the heart of town. The total existing area is 163.87 hectares. (29.90%) which is used for transportation of which 12.0 meters, 18.0 meters, and 30.00 meters wide roads are created in the city. One of the 30.0 meters wide, ring roads are proposed all around the Nippani town/city. And also The truck terminal area is proposed along the National Highway near Lakadi pool Nalla area about 13.50 hectares in proposed plan of 2021. The transportation and communication will give priority to develop various types of roads within and outside the city. The proposed land will be increased to 435.19hecare (28.95%) of the total

developed area in the town, (Table no.2) total area is proposed under this category is 435.19 hectares. This works out to be 29.88% of total area. This includes the existing transportation area.

7. Agriculture and Water Sheet:

The water sheet and agriculture in the town was not given much importance this category of land will be improved with the exiting land with little ovation. As compared to earlier decade, these categories of land will improve with modification and it is proposed that, the area under these categories will increase mainly in case of water bodies 27.45 hectare (1.82%) and agriculture will remain constant area i.e 18.60 hectare (1.23%) of the total developed area.(Table No.2).

Table No.3 Decadal changing pattern of land use in Nippani(2011-2021)

S.No	Land Use Type	2011		2021		Decadal change in % 2011-2021	
		(Area In Hect)	Total Area (%)	(Area In Hect)	Total Area (%)	(Area In Hect)	Total Area (%)
1	Residential	188.73	34.44	731.21	50.19	542.48	15.75
2	Commercial	41.47	7.57	84.21	5.78	42.74	-1.79
3	Industrial	43.16	7.88	54.5	3.74	11.34	-4.14
4	Public & semi public	30.06	5.49	57.05	3.92	26.99	-1.57
5	Parks & open space	32.33	5.90	93.99	6.45	61.66	0.55
6	Public utility	0.61	0.11	0.61	0.04	0	-0.07
7	Transport and Communication	163.87	29.91	435.19	29.88	271.32	-0.03
8	Total	500.23	100	1,456.76	100	956.53	0.00
	Water sheet	29.13	5.316	27.45	59.609	-1.68	54.29
9	Agriculture	18.6	3.394	18.6	40.391	0	37.00
	Grand total	547.96	100	1,502.81	100	954.85	0.00

Source: City Municipal Council computed by researcher.

Existing and Landuse Map of Nippani Town 2011-2021

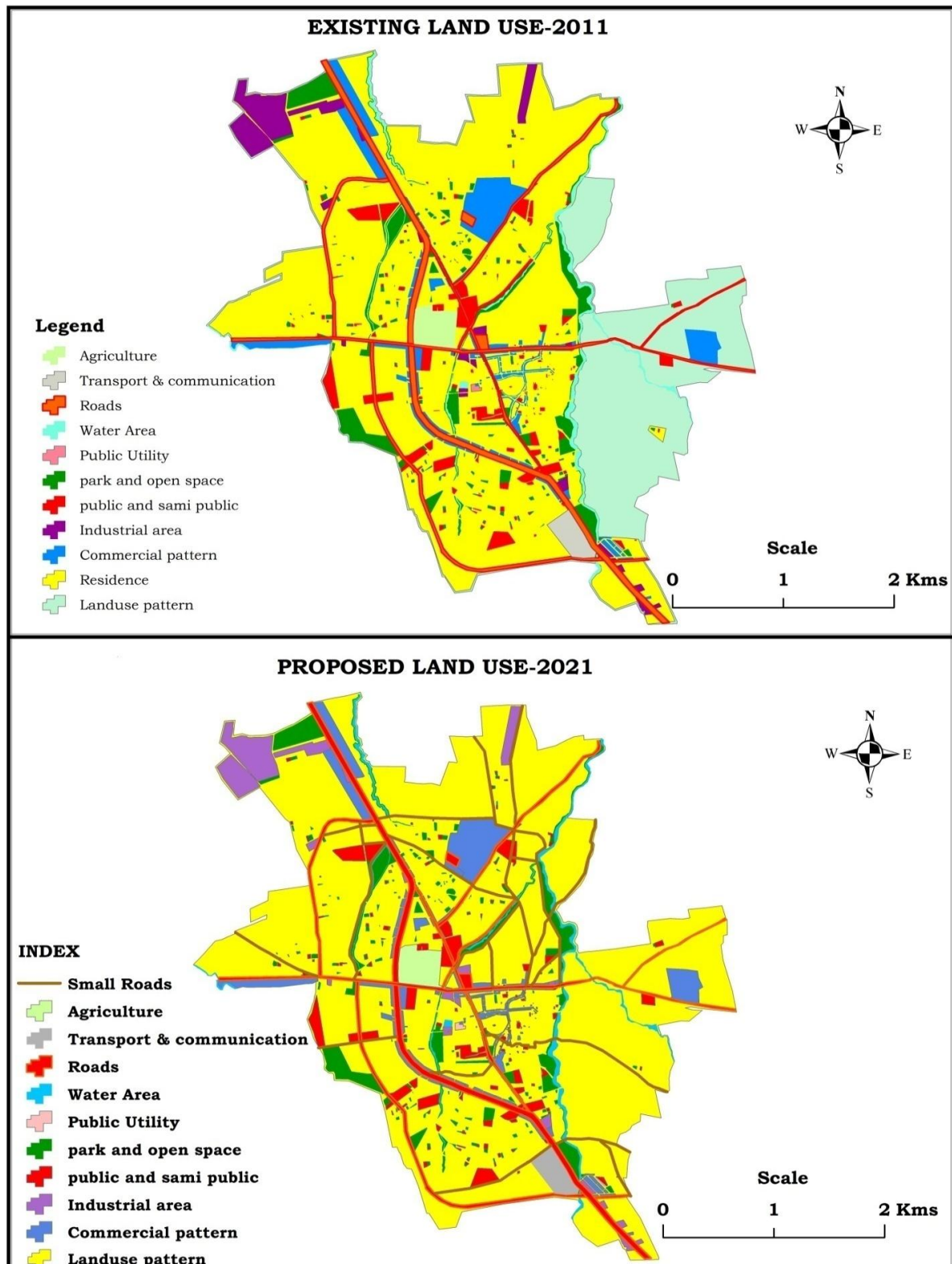


Fig.5

Conclusion:

If we look at the main problem of the Nippani town, there is no micro-level planning and the growth of the town depends on the builders and developers of

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the area. Location plays an important role in attracting people. The old planned city of Nippani especially, the walled city was not in a position to carry the rapid population growth; It has degraded into the

environment, which is seen in the form of air pollution, increasing heat intensity, falling water table etc. The city municipal council Development Authority has demarcated new boundaries as per the need and demand of the people, but this has not helped to reduce the pressure on the municipality or the walled city area. As far as Nippani concerned, people from the surrounding areas have a better opportunity and they move towards the city to fulfill their needs and requirements. The development process going on here in the last two decades is neither well planned nor environmentally friendly.

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