



THE ASSAM GAZETTE

অসাধাৰণ

EXTRAORDINARY

প্ৰাপ্ত কৰ্তৃত্বৰ দ্বাৰা প্ৰকাশিত

PUBLISHED BY THE AUTHORITY

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No. 538 Dispur, Wednesday, 20th July, 2022, 29th Ashadha, 1944 (S. E.)

GOVERNMENT OF ASSAM
ORDERS BY THE GOVERNOR
DEPARTMENT OF HOUSING & URBAN AFFAIRS

NOTIFICATION

The 23rd May, 2022

No.UDD(T)195/2022/6.— In exercise of the powers conferred by the Section 9 and Sub-section (1) of Section 10 of the Assam Town & Country Planning Act, 1959 (as amended) and (Assam Act II of 1960) read with Sub-rule (1) of Rules 3 of the Assam Town & Country Planning (Publication of Master Plan and Zoning Regulations) Rules 1962, the Governor of Assam is pleased to publish the following notice regarding the publication of the Draft Master Plan for Chapakhowa.

Notice for publication of the Draft Master Plan for Chapakhowa

1. It is notified that the Draft Master Plan for Chapakhowa prepared under Section 9 of the Assam Town & Country Planning Act, 1959 (as amended) as described in the schedule below is here by published.
2. Any person or persons affected by the Draft Master Plan may submit their objections or opinions in writing to the Director of Town & Country Planning within two months from the date of publication.
3. The Draft Master Plan with all relevant papers and maps may be inspected free of cost during the Office hours at the Office of Director, Town & Country Planning, Dispur, Guwahati-6, Deputy Director, Town & Country Planning, Dist Office –Dibrugarh, office of the Chairman, Chapakhowa Municipal Board & Sadiya Circle Office. Copy of the Draft Master Plan is available in the Office of the Deputy Director, Town & Country Planning, Dist Office – Dibrugarh for sale on payment.

SCHEDULE

District	:	Tinsukia
Revenue Circle	:	Sadiya
Mouza	:	Sadiya
Block	:	Sadiya
Master plan Area	:	36.98 Sq.km (3698 hectare)
Municipal Area	:	5.41 Sq.km (541 hectare)
Rural Area	:	31.57 Sq.km (3157 hectare)

REVENUE AREAS INCLUDED IN THE DRAFT MASTER PLAN FOR CHAPAKHOWA:**REVENUE CIRCLE MOUZA/BLOCK TOWN AND VILLAGES**

Sadiya

Sadiya

1. Chapakhowa town 2. 1 No. Chapakhowa 3. 2 No. Chapakhowa 4. 1 No. Santipur 5. 2 No. Santipur 6. 3 No. Santipur 7. 4 No. Santipur 8. Batani Tarani 9. Bokapathar 10. Borjhiya 11. Chapakhowa Assamiya Nepali 12. Jyotish Nagar 13. Kapaupathar 14. Lakhimi pathar 15. Majuli 16. Shilghat Tarani

DESCRIPTION OF BOUNDARIES :

NORTH	:	Santipur, Arunachal Pradesh
SOUTH	:	Kundil River, Upper Nasai village
EAST	:	Kundil River
WEST	:	Borgorah-Deopani No 1, Naharbari

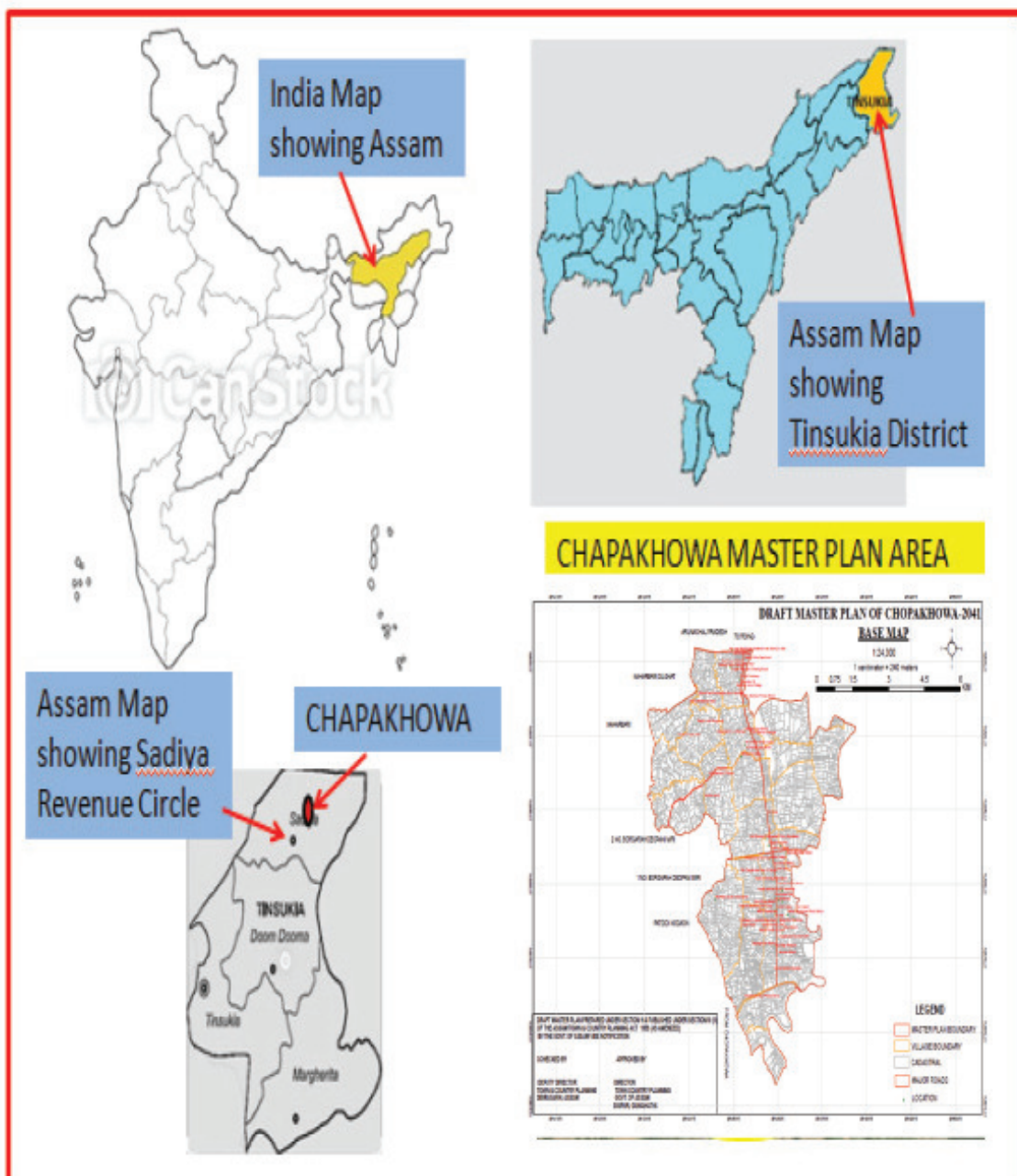
KAVITHA PADMANABHAN,
Commissioner & Secretary to the Govt. of Assam,
Department of Housing & Urban Affairs.

CHAPTER - 1

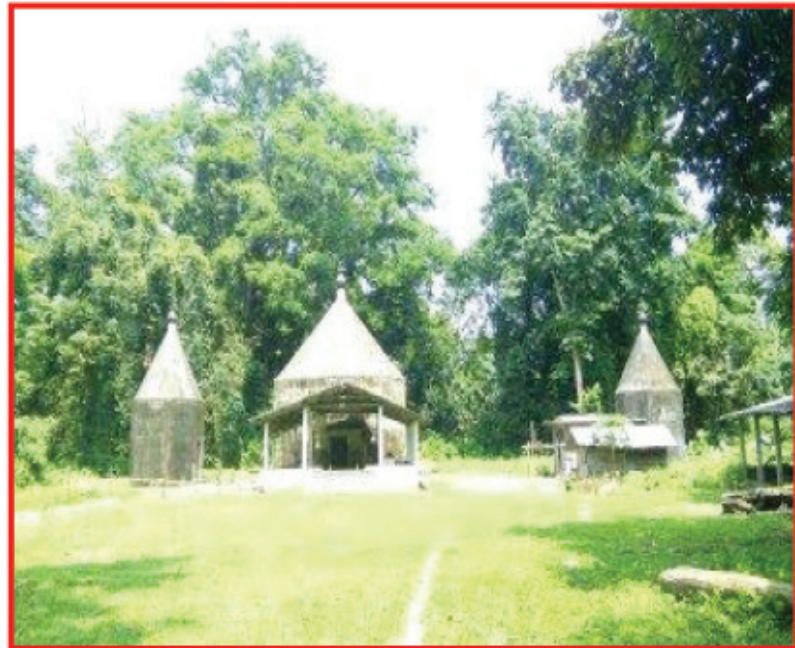
1. INTRODUCTION TO MASTER PLAN AREA

1.1 Location

Chapakhowa is one of the easternmost town of the state of Assam. It is situated 556 km. towards north-east from state capital Dispur by road and 77 km. from nearest important town Tinsukia. The geographical location of Chapakhowa town is 27° 52'05.68" N to 27° 58'08.40" N **Latitude** & 95° 45'17.10" E to 95° 45'32.80" E **Longitude**.



Chapakhowa is the centre of the Sadiya subdivision in the Tinsukia district. This region carries a long history and culture. The mention of the region is found in the ancient mythology of India. This region is believed to be the ancient Vidarbha kingdom of Mahabharata which was ruled by the king Bhismaka. Lord Krishna fell in love with King Baan's daughter Rukmini and later married her.



There are many ancient temples lying around this region which are of historical and archeological importance viz. Tamreswari temple, **Burha-Burhi Than** etc.

1.2 Regional setting

Chapakhowa region falls in the North-eastern part of India in the Upper Assam Valley. The master plan area is situated on a flat land and towards its east boundary, beautiful Jiya river flows and eventually merges with the majestic River Kundil at the Gurung Basti riverside.



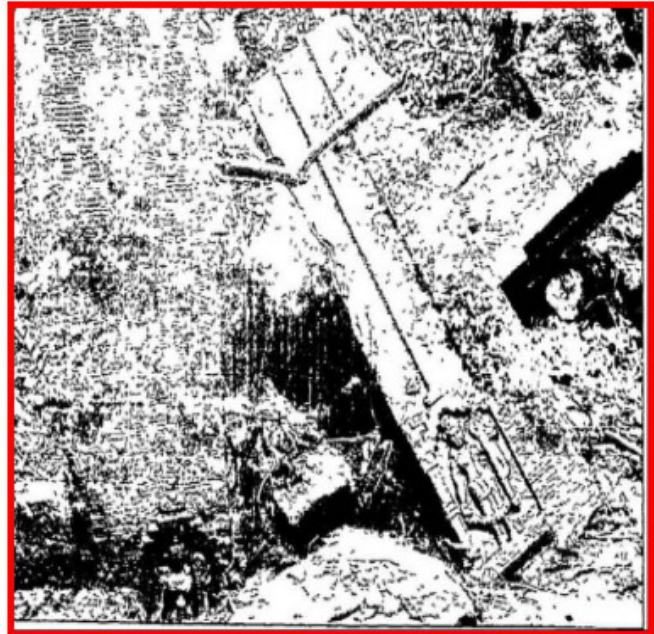
1.3 Brief history of the town

The name Chapakhowa is believed to have originated from the Deori word (Deori is an indigenous group of Assam) *Sepa Haba* which means *Owtenga-Khowa* in Assamese, and in English it means those who eat elephant apple. It is blessed with a convenient connectivity to the neighboring

state of Arunachal Pradesh. Chapakhowa can very well be nature's hub where the old meets the new fragrances of life's, art, culture, architecture. Chapakhowa is a town with diverse communities cohabiting in a close harmony across the multiple pockets of the municipal board area.

Tamreswari (Kechai-Khati) Temple

This was the most notable among the temples built by Chutia kings in 15 century. The temple was dedicated to Kechaikhati, a primordial female tribal deity commonly found among different Bodo-Kachari groups. As per the Kalika Purana, the main temple was octagonal in shape surrounded by eight dwarapals in eight directions. When the British visited the temple complex, the main temples has disappeared and



only a small square structure remained. There were two giant elephant sculptures with silver tusks at the main door of the complex. The walls were made without any mortar and instead used iron dowels and brackets. The whole temple was surrounded with brick walls and on the western wall there was a place for human sacrifice. Although the temple is now completely submerged under marshy lands due to silt deposition in 1959, previous studies show that the main statues of the temple were built of sandstone and granite. It is about 18 miles to the north east of Sadiya and it is situated in the bank of river Dhal.

The Dhola-Sadiya Bridge, also referred to as the Bhupen Hazarika Setu, is a beam bridge in India, connecting the northeast states of Assam and Arunachal Pradesh. The bridge spans the Lohit River, a major tributary of the Brahmaputra River, from the village of Dhola (Tinsukia District) in the south to Sadiya to the north. The bridge is the first permanent road connection between the northern Assam and eastern Arunachal Pradesh



At 9.15 kilometres (5.69 mile) in length, it is the longest bridge in India over water.

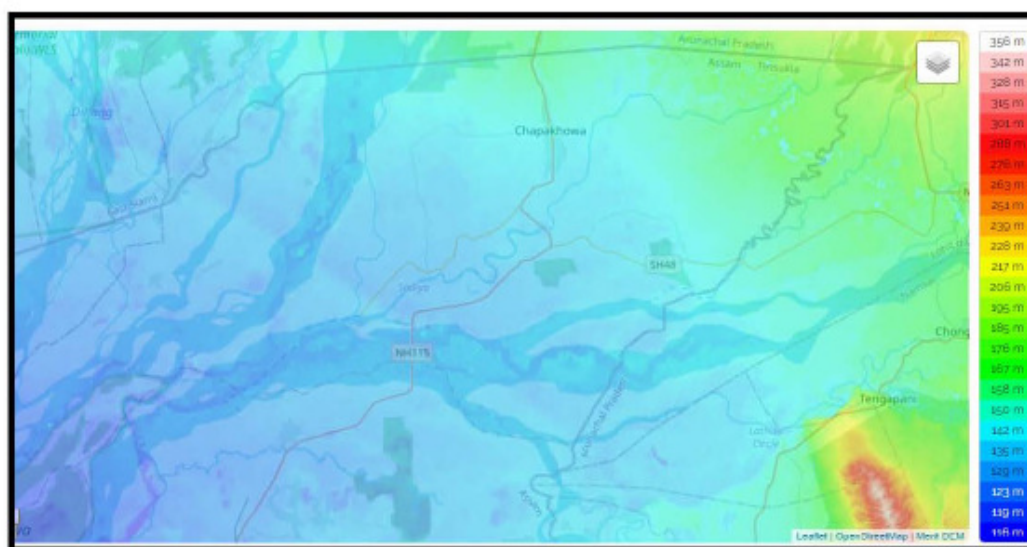
1.4 Climate

The climate of Chapakhowa town is moderate and ranges from 21°C to 35°C during summer. In winters, the temperature again falls down to as low as 13°C. Average temperatures in Chapakhowa are 17°C in January, 21°C in February, 23°C in March, 23°C in April, 25°C in May. The mean monthly temperature is the lowest in December-January and the highest in June-August. The average annual temperature is 23°C. Since the climate is tropical, the rainfall is heavy as in the other parts of the state. The average rainfall of the region is 2517mm. The rain associated with monsoon sets in by the middle of May reaches its peak in July and continues till the end of September. The relative humidity during the rainy season is almost 90%. The prevailing wind direction is east and north-east. The velocity of wind is about 5-7 km per hour and 63% Humidity. A medium range of fog is also experienced in the region during the winter season.

1.5 Topography

Chapakhowa is located at 27° 52'05.68" N to 27° 58'08.40" N **Latitude** & 95° 45'17.10" E to 95° 45'32.80" E **Longitude**. It has an average elevation of 123 meters. The Jiya and Kundil rivers give the town's soul seekers a major natural destination to devour into and covered with green.

Below is the elevation map of Chapakhowa, which display range of elevation with different colours. The map also provides idea of topography and contour of Chapakhowa.



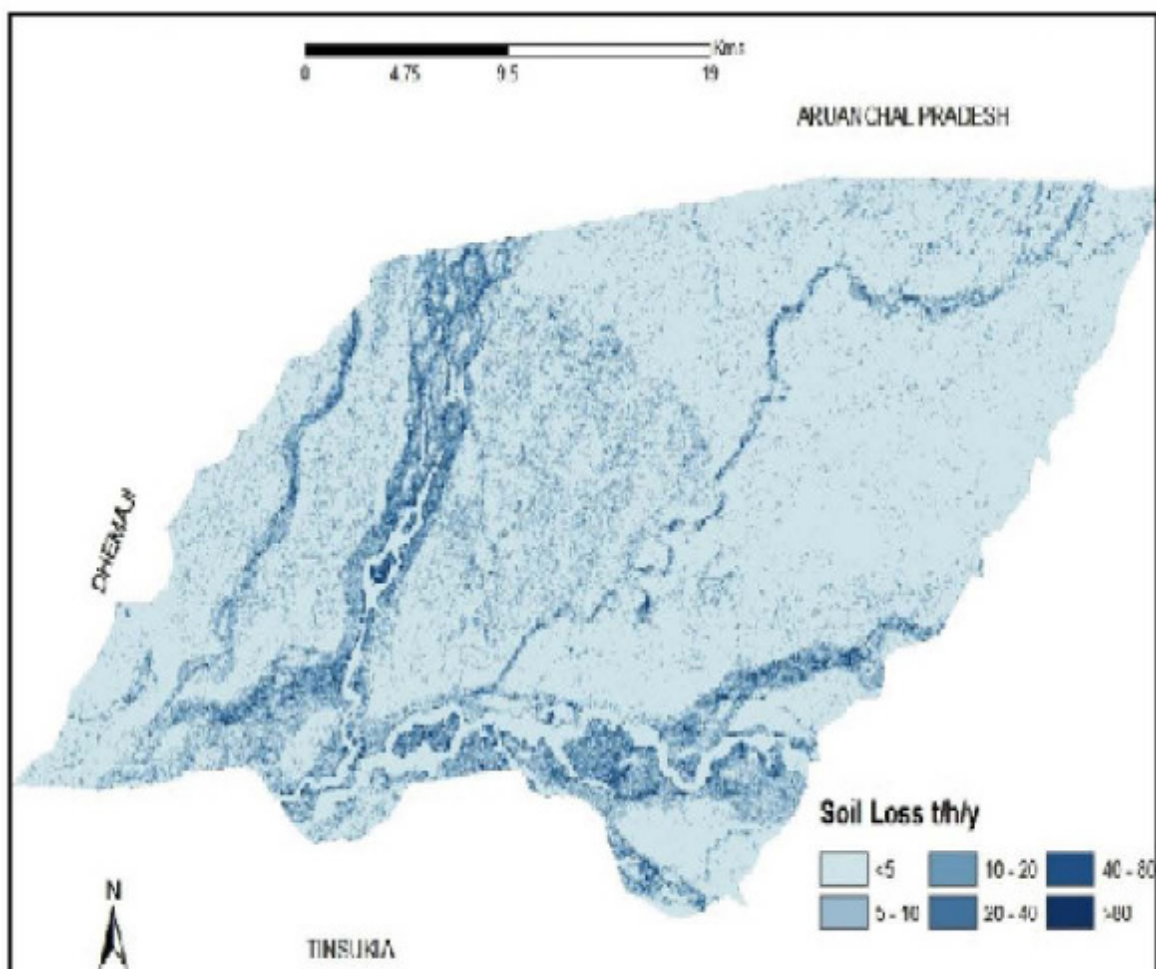
1.6 Soil Condition

Physiographically the area is characterized by Brahmaputra Plains in the southern part with gentle slope towards east-south. The

soil in the area may be grouped in to three broad categories depending upon the origin and occurrence. These are given below-

- a. Newer alluvial soil – Flood plain areas of river Brahmaputra and the tributaries in the northern part are characterized by light gray clay with sand and silt.
- b. Older alluvial soil - It occurs mainly in the central part with limonite yellow to reddish yellow clay.
- c. Soil cover in forest areas – It is deep reddish in colour and occurs over the older Geological formation in the southern most part of Chapakhowa.

Chapakhowa region is covered by alluvial deposits of recent and sub-recent origin. In many places of the area, there are terrace deposits. These are known as the older or high level alluvium consists of boulders pebbles and cobbles or quartzite, sandstone, shale, slate. The soil is very much fertile in Chapakhowa and most of the populations of the locality are cultivators. But due to soil erosion land degradation has been seen at river side and it leads to water pollution, and bio-diversity loss.



1.7 Settlement Pattern

The settlement pattern of Chapakhowa is a mixed one. Due to the presence of Sadiya sub-division and other government offices at center of Chapakhowa town people from peripheral villages along with workers from other parts of state comes to the region. The top officials of Sadiya sub division office mainly come in deputation basis from different parts of India and particularly from Assam many people after retirement settled in Chapakhowa. The indigenous people of the state live both in urban and rural areas. A good number of Nepali, Bengali and Arunachali people also reside in Chapakhowa.

1.8 Rural-urban scenario

Chapakhowa master plan covers an area of 36.98 sq.km. out of which the urban and rural area is 5.41sq.km. and 31.57 sq.km. respectively. As per 2011 census, the urban and rural population in the master plan area is 10305 and 12877 persons.

TABLE NO :- 1
Urban & Rural Area Population

Name of the Master plan Area	Category of Area	Area In sq.km	Population in 2011
Chapakhowa Master plan	Urban	5.41	10305
	Rural	31.57	12877
Total		36.98	23182

Source: Census of India, 2011

1.9 Physical growth and expansion of the town

Chapakhowa town committee was formed in April, 2013 having 4 (four) wards and after government notification in 16th June, 2020 having 10(Ten) wards and upgraded into Municipality on the 11th Oct, 2018. Chapakhowa master plan area covering an area of 36.98 Sq. km with one revenue mouza, 9 town sheet of Chapakhowa municipal area, 23 cadastral map of 15 villages, and with a population of 23182 persons. With the formation of the Sadiya sub-division, S.P office & Sadiya revenue along with other Govt. offices including Judiciary according to the norms were establish and this gives opportunity to Chapakhowa town to flourish and physical growth on other hand. The physical growth and expansion of the town mainly taken place due to creation of Sadiya sub- division due to its remotest location in Assam state.

For planning purpose Chapakhowa master plan area is divided into the following zones:-

A. Urban zone comprises of the following areas:-

1. 10 wards under Chapakhowa town.
2. Urbanized area adjacent to the 10 wards.

B. Rural zone comprises of the following villages:-

- 1 1 No. Chapakhowa
- 2 2 No. Chapakhowa
- 3 1 No. Santipur
- 4 2 No. Santipur
- 5 3 No. Santipur
- 6 4 No. Santipur
- 7 Batani Tarani
- 8 Bokapathar
- 9 Borjhiya
- 10 Chapakhowa Assamiya Nepali
- 11 Jyotish Nagar
- 12 Kapaupathar
- 13 Lakhimipathar
- 14 Majuli
- 15 Shilghat Tarani

1.10 Need of the master plan

Master plan is a statutory instrument for controlling, directing and promoting the sound and rational development/ redevelopment of an urban area with a view to achieving maximum economic, social and aesthetic benefits. The master plan generally indicates the manner in which the use of land in the respective area is to be regulated and also indicates the manner in which the development of land therein is to be carried out. A master plan is a scheme of arrangement of these, that is the master plan consists of co-ordinate plans of major streets, transportation facilities, parks, recreation facilities, schools, housing, public buildings, business and industrial areas- all arranged in such a way which would function most efficiently and economically and also enhance the aesthetic beauty of the town at the same time. It is also an important tool for guiding and regulating the growth of the town.

The concept of planning has evolved gradually through the changing demand of man and environment, but has assumed greater significance and wider connotation with the inception of the present century. The rapid pace of industrial expansion and urbanization has hastened the growth of urban centers. The forces operating behind

urban growth namely social, cultural and economic have drawn people towards towns or cities. The trend of urban expansion in recent years is becoming more and more difficult to direct or to control. So in order to check the unplanned and haphazard growth of the towns, the principles of planning have been accepted as urgent and imperative.

A town is composed of land, buildings, people, utilities and services and transportation. It is a large configuration of more or less permanent settlers engaged in diverse economic activities. As a town grows, it attracts larger population; it enlarges the scope of their activities, while the complexity of living distorts the well-organized concept of the urban space organization.

The evils of unplanned growth of our towns have caused enormous problems such as shortage of living accommodation, traffic congestion, lack of sanitation and other community facilities and amenities. The growth of population and the potentiality of the Chapakhowa town and adjoining areas, the State Government realize the importance of proper planned growth of the town and the preparation of the master plan thereafter.

CHAPTER-2

2. DEMOGRAPHY

2.1 Total Population

According to census of India 2011, the total population of Chapakhowa master plan area is 23182 persons, out of which 10305 persons live within the Chapakhowa municipal board covering an area of 5.41 sq. km. and 12877 persons in rural area covering an area of 31.57 sq.km.

2.1.1 Male and female population

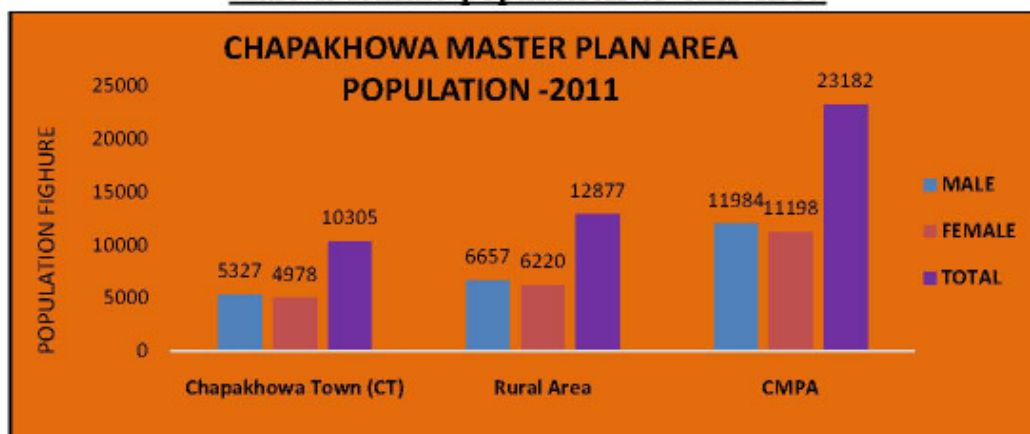
The details of male and female population for the Chapakhowa master plan area (CMPA) is shown in the following table:

TABLE NO: - 2
Male and Female Population of CMPA in 2011

Sl.NO.	Name of village	Population		
		Male	Female	Total
1	Chapakhowa town	5327	4978	10305
2	1 No. Chapakhowa	264	290	554
3	2 No. Chapakhowa	200	185	385
4	1 No. Santipur	153	153	306
5	2 No. Santipur	121	143	264
6	3 No. Santipur	216	201	417
7	4 No. Santipur	3246	2945	6191
8	BataniTarani	89	92	181
9	Bokapathar	93	99	192
10	Borjhiya	168	156	324
11	ChapakhowaAssamiya Nepali	404	352	756
12	Jyotish Nagar	233	224	457
13	Kapaupathar	306	273	579
14	Lakhimipathar	437	431	868
15	Majuli	361	347	708
16	ShilghatTarani	366	329	695
	TOTAL	11984	11198	23182

Source:- Census of India- 2011

FIGURE:- 1
Male & female population of CMP Area



2.1.2 Population growth rate

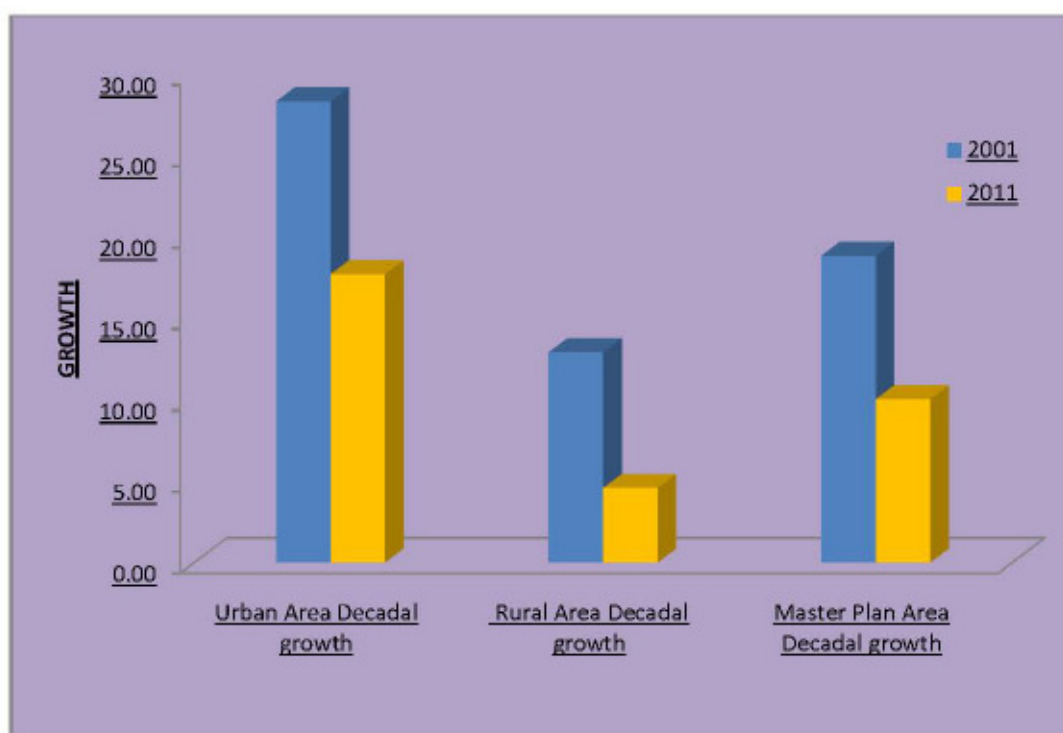
Sadiyasub-division was declared in the year 1989 and Chapa khowa is situated in the center of Sadiya sub-division. Chapakhowa had only 6823 persons in 1991 and the population has increased to 8755 persons in 2001. According to 2011 census, the population of Chapakhowa town is 10305, out of which the number of male population was 5327 & the number of female was 4978. In 2013, the Chapakhowa town committee was established with 4 (four) wards and later on town committee converted to municipality on 11th Oct, 2018 and as per Govt. Notification UDD(M)156/2010/pt/277 dated 16th June, 2020 existing 4 (four) wards increases to 10 (Ten) wards by remaining the same area. The total population in Chapakhowa master plan area in the year 2011 is 23182.

The decadal growth of population in the urban and rural areas of Chapakhowa master plan area from 1991 to 2011 is shown in the following table:-

TABLE NO: - 3
Growth of Population in Chapakhowa Master Plan

Year	Urban Area			Rural Area			Master plan Area		
	Pop	Decadal Increase of pop	Decadal growth	Pop	Decadal Increase of pop	Decadal growth	Pop	Decadal Increase of pop	Decadal growth
1991	6823	-	-	10905	-	-	17728	-	-
2001	8755	1932	28.31	12313	1408	12.91	21068	3340	18.84
2011	10305	1550	17.70	12877	564	4.58	23182	2114	10.03

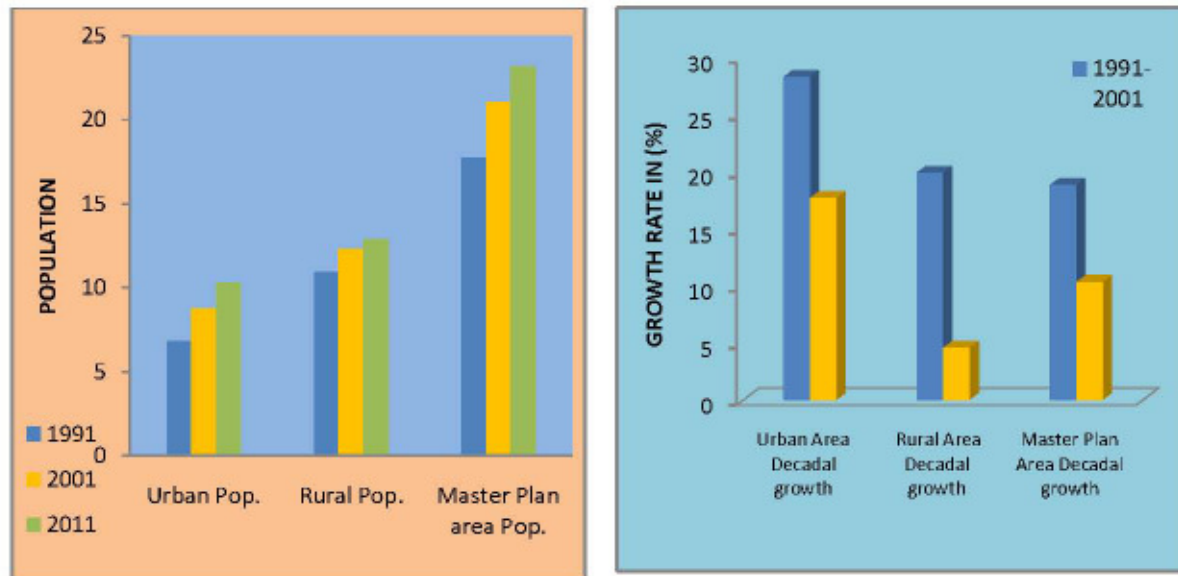
Source:- Census of India, Assam.

FIGURE :- 2**Population Growth 2001 – 2011****TABLE NO:-4****Population Growth Rate of Assam and Chapakhowa Master Plan Area :- 1991-2011**

Particulars	POPULATION			GROWTH RATE IN %	
	1991	2001	2011	1991-2001	2001-2011
Assam State					
Total	22.49	26.66	31.17	18.54	16.93
Urban	2.49	3.44	4.39	38.24	27.61
Rural	19.93	23.22	26.78	16.51	15.35
* Population in Millions *					
Chapakhowa Master Plan					
Total	17.73	21.07	23.18	18.84	10.34
Urban	6.82	8.76	10.3	28.31	17.7
Rural	10.91	12.31	12.88	19.91	4.58
* Population in Thousand *					

Source:- Census of India

FIGURE:- 3
Population Growth Rate of Chapakhowa Master Plan Area



2.1.3 Population density

The net density of population for Chapakhowa municipal board and rural area in 2011 was 1905 and 408 persons per Sq.km respectively and the master plan area as a whole the density of population is 626 persons per sq.km in 2011.

2.1.4 Sex ratio

In 2001, the overall sex ratio i.e. the number of female per thousand males in Chapakhowa town was 882 which increased to 935 in 2011. The sex ratio for the last two decades as per census of India is given below:

TABLE NO:- 5
Sex Ratio

Year	SEX RATIO OF TOTAL POPULATION		SEX RATIO OF 0-6 AGE GROUP	
	2001	2011	2001	2011
Assam State *				
Total	935	947	965	957
Urban	872	939	943	955
Rural	944	950	967	957
Chapakhowa Master Plan *				
Total	885	934	937	932
Urban	882	935	967	887
Rural	888	934	919	963

Source:- Census of India

FIGURE:- 4
Sex Ratio of Assam:2001-2011

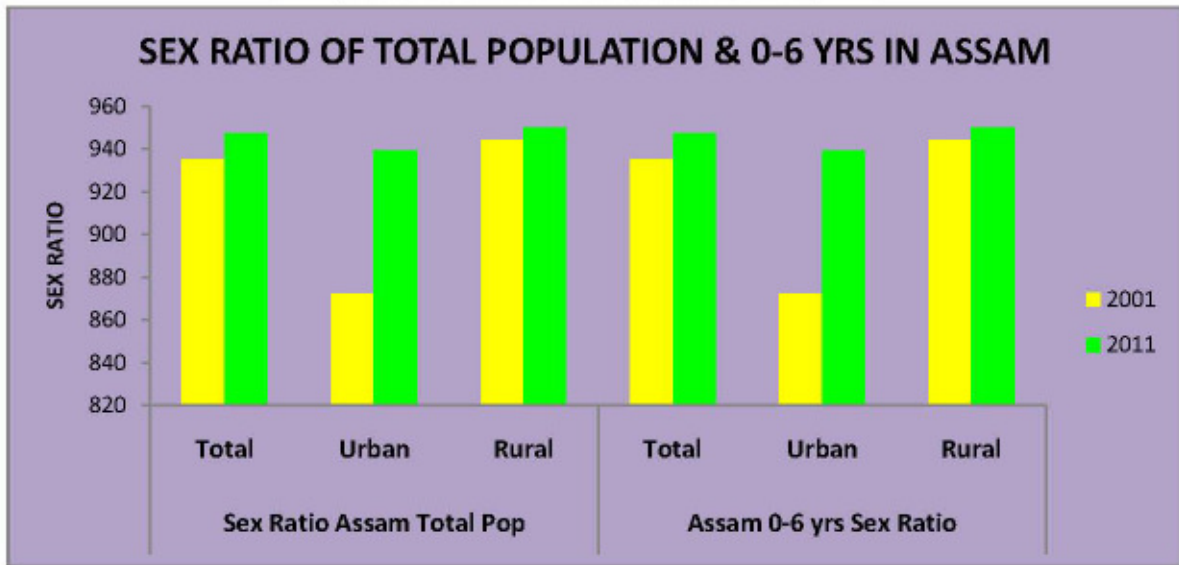
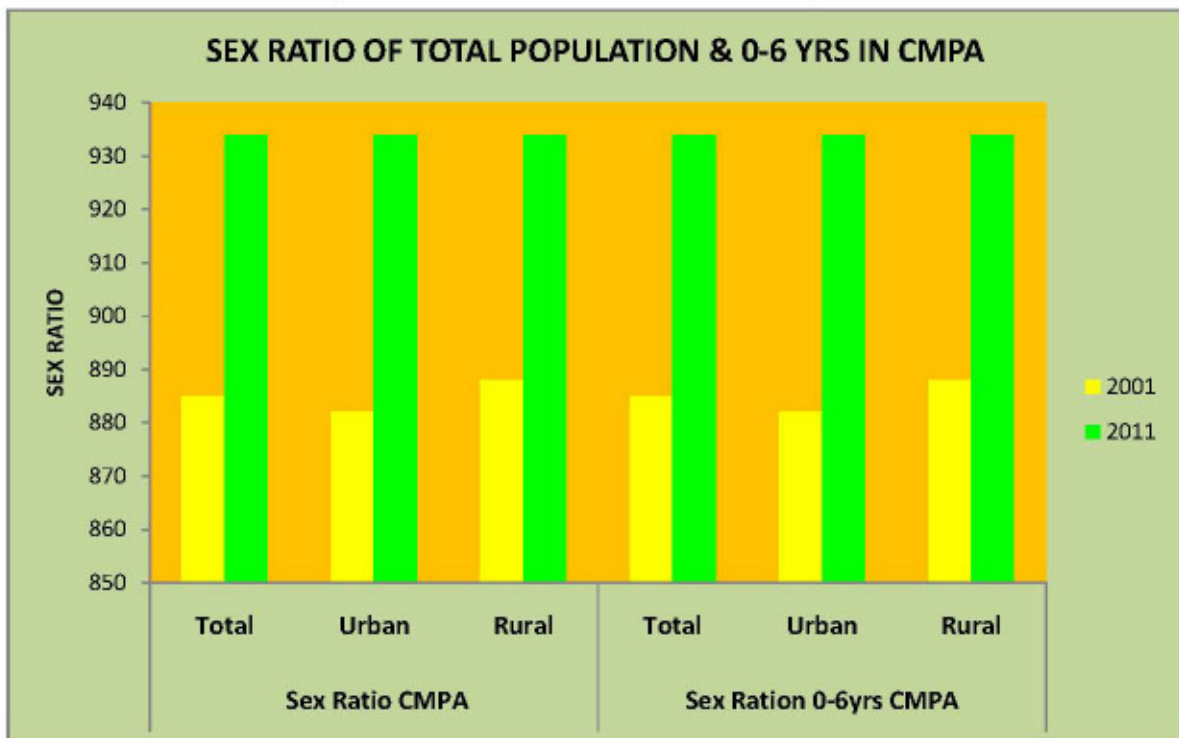


FIGURE:- 5
Sex Ratio of CMPA:2001-2011



2.2 Literacy

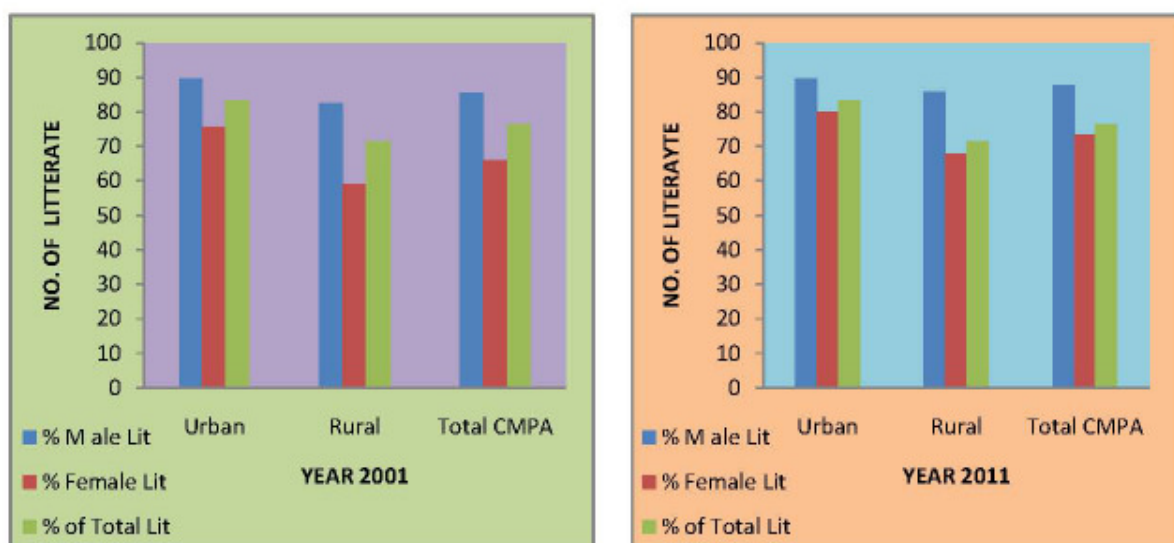
The literacy rate of Chapakhowa urban area as per census of India report, 2011 is 85.08% which is just below state urban literacy rate of 88.88%.The comparison of literacy rate in 2001 and 2011 for Chapakhowa master plan area is given below:-

TABLE NO:-6
Literacy of CMPA

LITERACY RATE OF CMPA - 2001												
Area	Total M pop	Total M pop Excluding 0-6 age	Actual M Lit pop	% Male Lit	Total F pop	Total F pop Excluding 0-6 age	Actual F Lit pop	% Female Lit	Total Pop	Total pop Excluding 0-6 age	Total Actual Lit Pop	% of Total Lit
Urban	4652	4019	3609	89.80	4103	3491	2640	75.62	8755	7510	6249	83.209
Rural	6522	5489	4532	82.57	5791	4842	2854	58.94	12313	10331	7386	71.494
Total CMPA	11174	9308	8141	85.62	9894	8333	5494	65.93	21068	17841	13635	76.425
LITERACY OF CMPA - 2011												
Urban	5327	4735	4253	89.8	4978	4453	3565	80.058	10305	9188	7818	85.089
Rural	6657	5788	4974	85.9	6220	5383	3653	67.862	12877	11171	8609	77.066
Total CMPA	11984	10523	9227	87.7	11198	9836	7218	73.383	23182	20359	16427	80.687

Source:- Census of India

FIGURE:-6
Literacy rate of CMPA



2.3 Working and non-working population

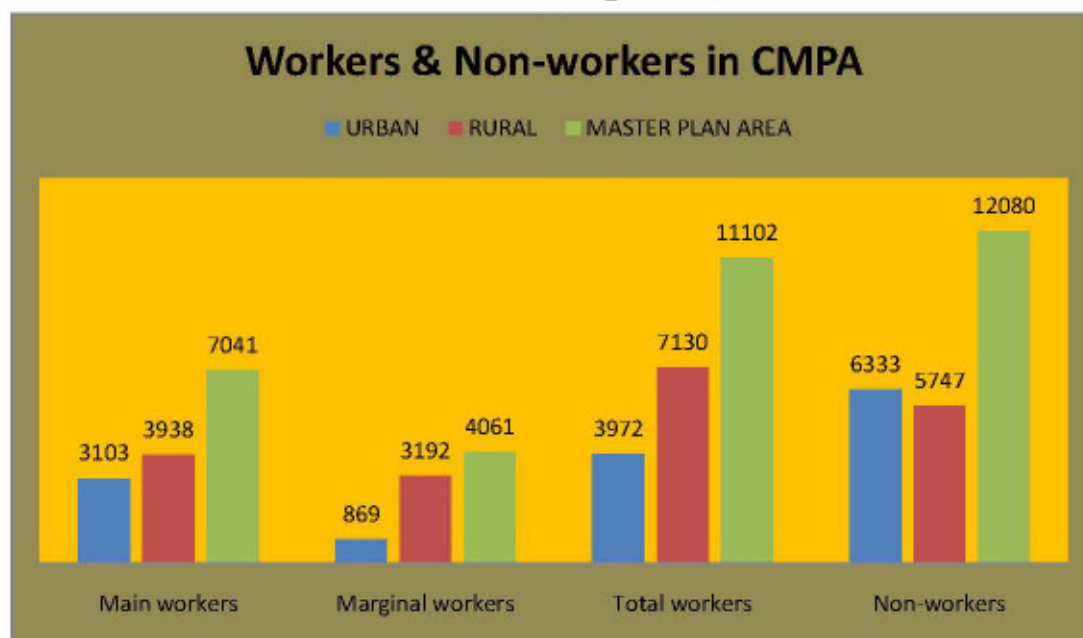
Out of total population of 23182 persons in Chapakhowa master plan area the working population is 11102 persons equivalent to 47.89% which is higher than the national average of 38%. The balance non-working population 12080 that is 52.11% mainly consists of women group and unemployed section of the population who are seeking employment in white collard jobs as well as investment opportunities in business. The breakup of this non-working population comprises of 12.18 % from the age group up to 6 years, 20% from age group of 6-15 years and 3% from the age of above 60 years.

TABLE NO:-7
Workers and Non-Workers in Chapakhowa Master Plan Area

Category	Urban Area			Rural Area			Total (Master Plan Area)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Main Workers	2518	585	3103	2880	1058	3938	5398	1643	7041
Marginal Workers	369	500	869	1130	2062	3192	1499	2562	4061
Total Workers	2887	1085	3972	4010	3120	7130	6897	4205	11102
Non-workers	2440	3893	6333	2647	3100	5747	5087	6993	12080

Source:- Census of India

FIGURE NO:-7
Workers and Non-Workers in Chapakhowa Master Plan Area



2.4 SC-ST Population

The details of SC and ST population for the Chapakhowa master plan area (CMPA) have been shown in the following table.

TABLE NO:-8
SC and ST population of CMPA in 2011

Sl.No.	Name	SC	ST
1	Chapakhowa town	373	1050
2	1 No. Chapakhowa	0	6
3	2 No. Chapakhowa	1	29
4	1 No. Santipur	0	285
5	2 No. Santipur	0	263
6	3 No. Santipur	0	172
7	4 No. Santipur	29	667
8	Batani Tarani	0	30
9	Bokapathar	0	0
10	Borjhiya	9	42
11	Chapakhowa Assamiya Nepali	0	0
12	Jyotish Nagar	23	4
13	Kapaupathar	0	15
14	Lakhimipathar	2	4
15	Majuli	10	46
16	Shilghat Tarani	0	158

Source:- Census of India

FIGURE :-8
ST Population of CMPA in 2011

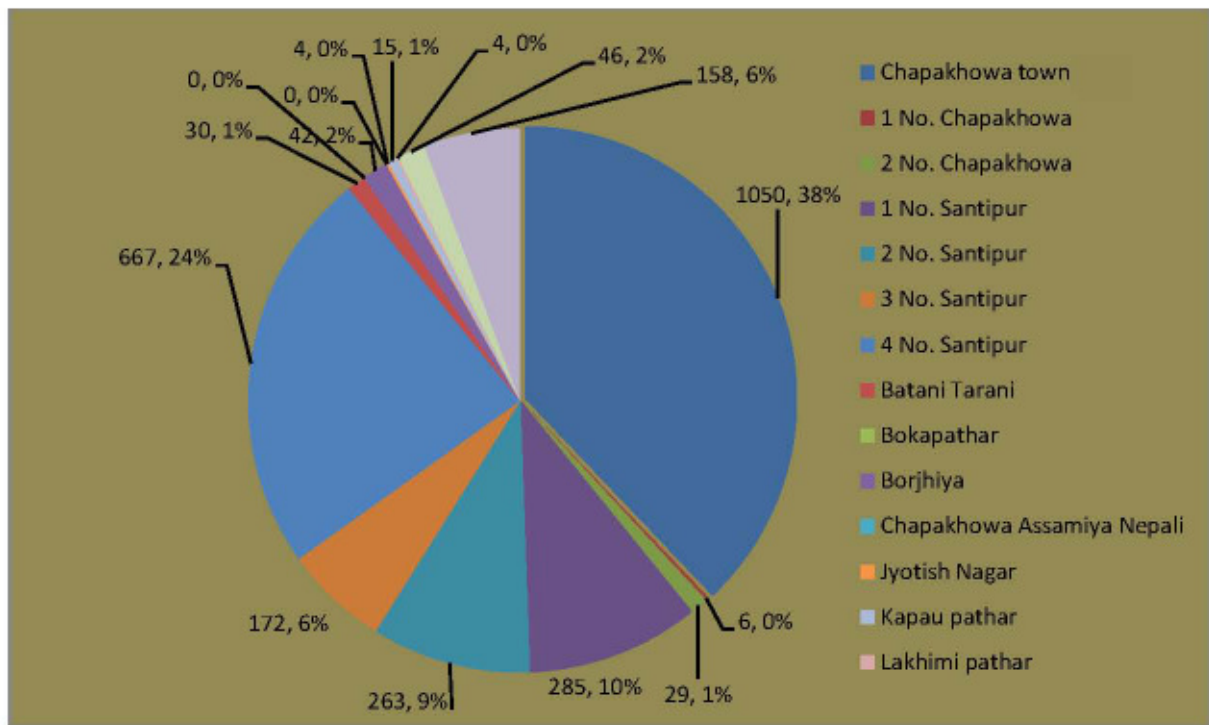
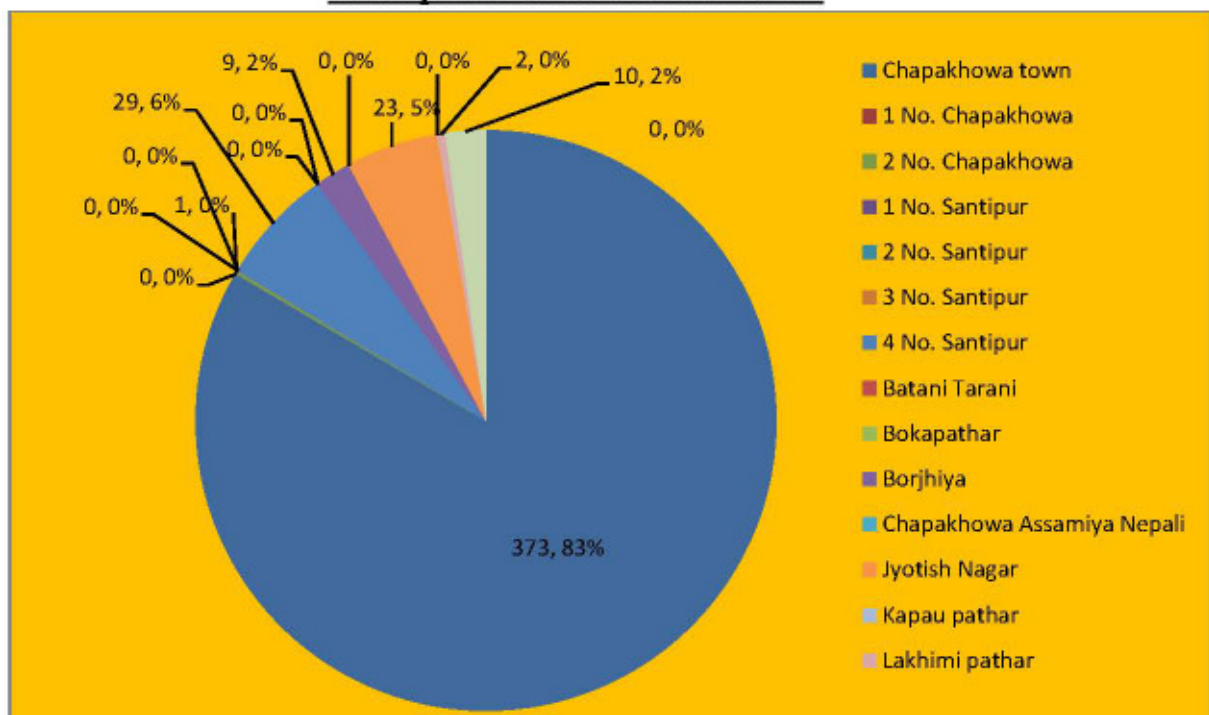


FIGURE :-9
SC Population of CMPA in 2011



2.5 Migration population

The robust local economy once attracted scores of people from other parts of the country to settle here in search of jobs and business opportunities. In addition to Assamese and various indigenous ethnic groups, the town is home to hundreds of people who migrated from undivided Bengal, Bihar, Uttar-Pradesh, Andhra-Pradesh and Nepal to change their fortunes. Chapakhowa also serves as a transit point to the adjoining rural belts and Arunachal's landlocked Roing and to an extent of Lower Dibang valley district.

2.6 House hold density and size

There are about 4717 residential houses in the year 2011 in Chapakhowa master plan area. The total population of planning area is 23182 persons, as such, household size is 4.91 persons per house and the house hold density is 11 houses per hectare. As per projection the gross housing requirement upto 2041 in the master plan area will be 9423 and accordingly this plan increases the residential land use of 698.69 hectare. As such the residential density in 2041 will be 14 households per hectare.

2.7 Population projection

In making the future population projection for Chapakhowa master plan area or the period 1991-2041, all the relevant factors such as changes in fertility and mortality rate, age-sex composition of the population, existing land use pattern, socio-economic condition and expected emigrational flows have been considered.

For the projection, a general fertility rate of 0.19 for woman in a productive age group has been assumed. Mortality trends is based on recent experience of India and the trends on increase on life expectancy on the United Nations model life table for under developed countries.

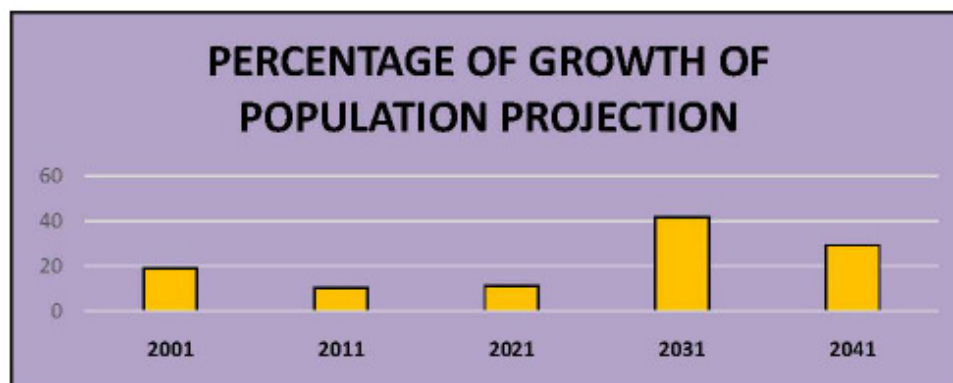
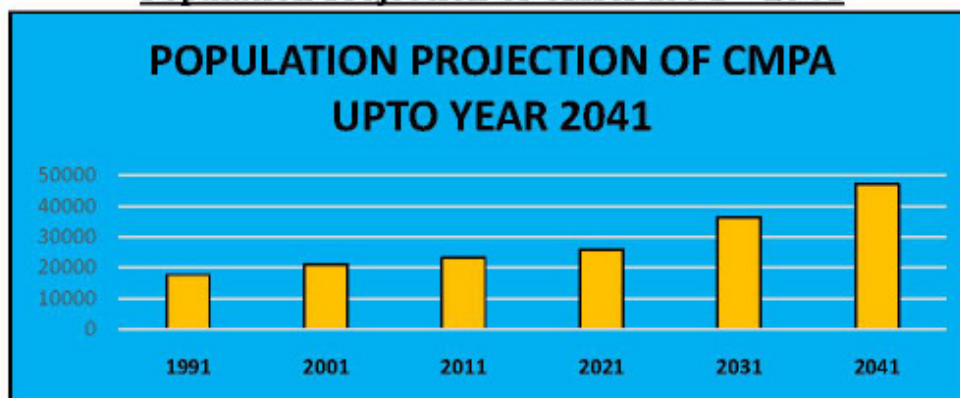
The final population projections have thus been arrived at with the entire base population of 1991 accounted for as the natural population, by adding to the natural population, the increase due to the natural growth plus the increase due to emigrational flow of trade & commerce purpose including the natural increase of migrants. The following table shows the population projections up to 2041 for Chapakhowa master plan area.

TABLE NO:-9
Population Projection of Chapakhowa Master Plan Area
1991 - 2041

Year	Urban	% of increase	Rural	% of increase	Master Plan Area	% of increase
1991	6823	--	10905	--	17728	--
2001	8755	28.32	12313	12.91	21068	18.84
2011	10305	17.7	12877	4.58	23182	10.03
2021	12129	17.7	13628	5.83	25757	11.11
2031	17515	44.41	18953	39.07	36468	41.58
2041	22910	30.8	24207	27.72	47117	29.2

Source:- Census of India

FIGURE :-10
Population Projection of CMPA 1991 - 2041



Source:-Chapakhowa master plan area population of 1991, 2001, and 2011 are from Census of India, Assam and 2021, 2031, and 2041 population figure estimated by the Town & Country Planning Dibrugarh.

CHAPTER -3

3. ECONOMIC BASE AND EMPLOYMENT

3.1 Formal Sector

The master plan for Chapakhowa stresses on the urgent need for creation of a conducive environment in which optimum use of natural, local and regional resources can be utilized to build up a sound economic base.

Chapakhowa is lacking towards industrialization and therefore people mainly engaged in primary sector instead of formal sector and the main reason behind is that societies were deprived in many aspects from communication gaps during last half a century. Recently under Sadiyasub-division land was allocated for industrial estate outside Chapakhowa master plan area and the plan process to have industries related to agro based, forest based and food processing etc. due to the availability of raw material in the region.



3.2 Informal Sector

Chapakhowa is bounded by Jiya, Kundil River and Sadiya Reserve Forest (North& West), Hollogaon RF. Although the region is rich in forest various wood based industries like safety matches, tea chests, furniture and pre-fabricated housing units etc can be established in proposed industrial estate in Sadiya.

The industrial development targets as proposed above can be achieved through private sector & Governmental agencies by providing suitable industrial land with necessary infrastructure like roads, uninterrupted power, water and drainage and subsidy on power tariff, financial assistances in the form of soft loan etc. The present concept of public –private partnership (PPP) can also be adapted for faster and smooth development of industries.

Chapakhowa town can be nerve center of business & service center and gate way to Arunachal Pradesh. Within the radius of 25km. distance, people use to come here to sell their produce and to buy necessary goods for their domestic consumption. There are two main markets in Chapakhowa, one is Daily market at the center of Chapakhowa town and the other is Santipur market (Santipur Gate) situated North side of Chapakhowa town. In Chapakhowa town there are also two vegetable markets, these markets not only fulfill the demand for Chapakhowa & its suburbs but also supply the essential commodities to the people of border areas of Arunachal Pradesh. These markets have played an important role in the economic expansion of Chapakhowa town.

Before 1970, the people of Chapakhowa need to go to Tinsukia for the banking transaction.. Presently, the banking service at Chapakhowa has improved because various banks, such as State Bank of India, Union Bank, Punjab National Bank, Assam Gramin Bank etc. and one micro finance bank have established their branches at Chapakhowa. The financial condition of the people has been improved along with strengthening of economic structure due to money mobilization by these banks. Moreover, insurance companies are also playing an important role for expansion of trade & commerce, social security and socio-economic development.

3.3 Occupational Pattern

Occupational structure depicts the characteristics of employment for livelihood of the people living in a particular planning area. The engagement of people in industry, trade, commerce and white-collar jobs etc. is known as the occupation & employment character. In 2001, the total number of workers in Chapakhowa municipal area was about 2964, which constitutes 33.85% of the total population of the municipal area. In 2001, the percentage of workers engaged in primary, secondary and tertiary sectors of occupations was 57.45%, 2.09% and 40.45% respectively. In 2011, the total workers in Chapakhowa master plan area were 11102 persons, out of which the number of workers in urban and rural area was 3972 and 7130 persons respectively. The percentage of workers engaged in primary,

secondary and tertiary sectors of occupations was 27.77%, 1.64% and 70.59% in the urban area and 75.97%, 4.40% and 19.62% in the rural area. In the planning area as a whole, the worker engaged in primary, secondary and tertiary sectors of occupations 58.73%, 3.41% and 37.86%

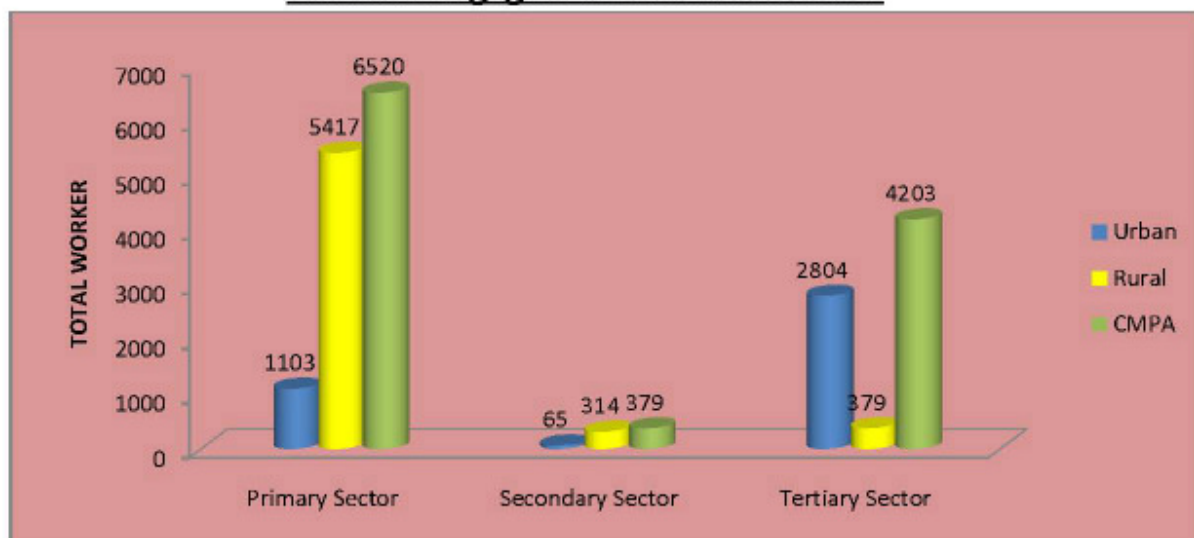
The occupational distribution of population in Chapakhowa master plan area for 2011 is shown in the following table:-

TABLE NO:- 10
Occupational distribution of population in
Chapakhowa master plan area

Sl.No	Category	Urban		Rural		Chapakhowa Master Plan Area	
		No. of workers	% of total workers	No. of workers	% of total workers	No. of workers	% of total workers
1	Primary Sector	1103	27.77	5417	75.97	6520	58.73
2	Secondary Sector	65	1.64	314	4.40	379	3.41
3	Tertiary Sector	2804	70.59	1399	19.62	4203	37.86
	Total	3972	100.00	7130	100	11102	100

Source:- Census of India

FIGURE :- 11
Workers Engaged in Different Sectors



The above table reveals that the number of people engaged in the primary sector is higher in the rural area than in the urban area. This is due to the fact that in the suburbs of Chapakhowa town, there is the existence of cultivation land. So, a good number of people work for kharif & rabi crops.

The number of people engaged in secondary sector in the planning area is low in comparison to the primary sector. The highest number of people i.e. 6520 is engaged in the primary sectors in the planning area.

In 2011, the total no of workers in urban and rural area increase to 3972 and 7130 persons respectively and the total no of workers in the master plan in 2001 was 8442 persons which is increase to 11102 persons in 2011.

On the other hand, the people of nearby villages have been blessed with the presence of alluvium & fertile soil, which begets rich crops and this is the main source of livelihood for them.

Secondly, due to recent connectivity, Chapakhowa town has been developing day by day thus providing source of living to many people. In view of the above, the question of livelihood can be discussed on the following heads as mentioned below:-

- (a) Engaged in industry like tea and cottage etc.
- (b) Engaged in cultivation.
- (c) Engaged in business.
- (d) Serving as a Govt. employee & private employee.

CHAPTER- 4

4. HOUSING AND SHELTER

4.1 Housing Scenario

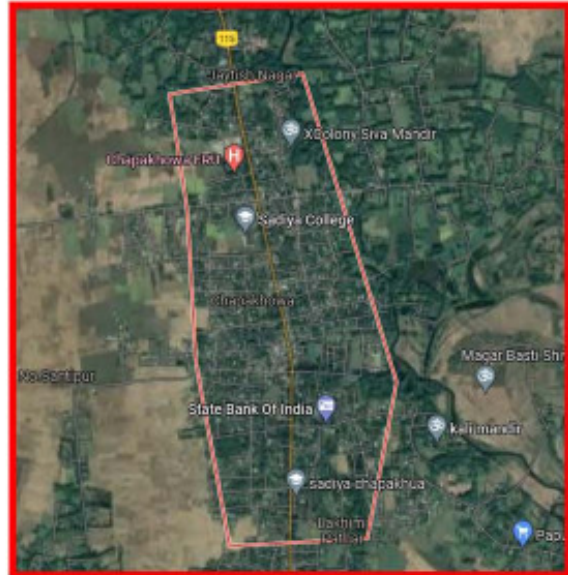
Housing is the basic need of the civilized living. Despite various efforts to solve the housing problem with various policies, there is a huge gap between the supply and the demand for the housing in Assam in general and Chapakhowa town in particular. A section of population in Chapakhowa either have no place to live in or living under highly unhygienic, inhuman condition and deprivations. Lack of privacy, absence of minimum basic amenities, use of substandard building materials and unhygienic surroundings dominates the scene of settlements. In Chapakhowa, while the housing problem in the rural areas, by and large is qualitative in nature and the problem in the urban areas is largely quantitative. The uncontrolled growth of population in urban areas due to migration and other factors have created a high magnitude of housing and infrastructure problem. Due to migration of rural population to the town, available vacant spaces in the urban areas are slowly being converted to unplanned, unhygienic built up area. Moreover, cost of land in the urban area is also increasing. People in the low and middle income group even find it difficult to acquire the land at the present prevailing cost.

The housing pattern of Assam, including Chapakhowa region have living habits of such a kind that is different from other states and region of the country. There is a general feeling in Chapakhowa region that the basic problem is up gradation of existing units and there is very little need



to be done to provide a roof for the utterly shelter less population as the category of such household is very negligible in the region.

An average household size in CMPA has 4.91, the size being higher in rural area (5.26 members) as compared to urban areas (4.54 members). The higher rural household size is partly responsible for the Assamese tradition of larger sized plots and built-up space and tradition of joint family system. The typical Assam type house, built in local design with bamboo as wall material and thatch/ backed roof materials is a prominent feature of the housing scenario. These units require some up gradation in the physical structure, strengthening and increase in longevity. Such an up gradation program is more urgent for “Kutchha”, units which accounts for almost 28.35% of the dwelling units in CMPA. In CMPA area most of the place is concentrated of government houses and government offices in planned manner in grid pattern as planned after formation of Sadiya Sub- Division.



It is true that development of our country is dependent on the physical and mental health of the people. People who sleep on streets or who live in unhygienic houses cannot fully develop emotionally, intellectually, economically, culturally or as a family. In fact, inadequate and insecure shelter can lead to social and political instability which eventually hampers economic development of our country.

To address this problem, Government of India introduced a new Housing scheme in 2014 namely Pradhan Mantri Awas Yojana (housing for all by 2022). If this scheme dose works it would at least help to reduce India’s major contribution with one of the highest homeless populations in the world. Under the PMAY, the main proposal was to construct 20 million homes for those people belonging to the low income families and Economically Weaker Sections in the identified urban and semi – urban areas by 2022. Accordingly, Chapakhowa municipality is also working to provide houses to the poor as per guideline but due to land issue in municipal area PMAY (U) schemes couldn’t be implemented.

4.2 Housing Supply Mechanism

Housing supply is the main role of the State Government to improve living condition to the inhabitants either by directly providing houses or by financial assistance. The Government has adopted different policies to solve the housing problems especially for poor and low income group. However, housing supply must address all social groups in the State including housing in urban areas, semi-urban areas and rural areas. In the recent years private building's and developer's come forward to solve the problems of housing in urban areas of the State by constructing flat. However, such practices have not been seen in Chapakhowa town due to less real estate development. In the rural areas of master plan a few house has been constructed under centrally sponsored housing scheme. The plan recommends that State Housing Board or any other Govt. agency should come forward to build housing colonies at Chapakhowa for all sections of people of the state considering its unique scenic beauty.

4.3 Housing Condition, Type of Structure etc.

The table below shows the number and percentage distribution of person's living in permanent, semi-permanent and temporary house in 2011.

TABLE NO:- 11
Housing Condition, Type of Structure in CMPA

Name of Area	Perman ent	Perce n tage %	Semi Permane nt	Perce n ta ge %	Tempor ary	Perce n ta ge %
Urban	781	34.42	845	37.24	643	28.34
Rural	99	4.04	577	23.57	1772	72.39
Total CMPA	880	18.66	1422	30.15	2415	51.20

Source:- Census of India

FIGURE :-12
Housing Condition

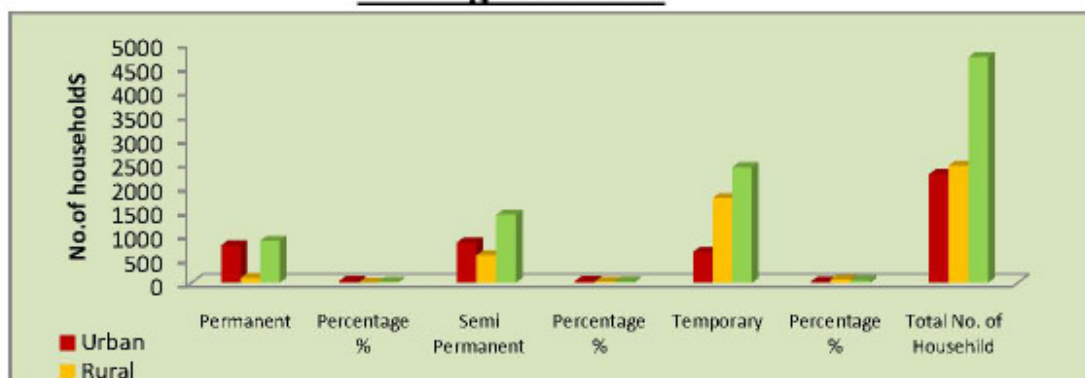


TABLE NO:- 12
Number and Percentage of Household by source of lighting.

Name of area	Total No of H/Hs	Electricity	%	Kerosene	%	Solar	%	Other Oil	%	Any other	%	No lighting	%
Urban	2269	1713	75.5	553	24.38	1	0.04	0	0	1	0.04	1	0.04
Rural	2448	654	26.72	1769	72.27	15	0.63	7	0.29	2	0.06	1	0.03
Total	4717	2367	50.18	2322	49.23	16	0.34	7	0.15	3	0.06	2	0.04

Source:- Census of India

FIGURE :- 13
Source of Lighting in CMPA

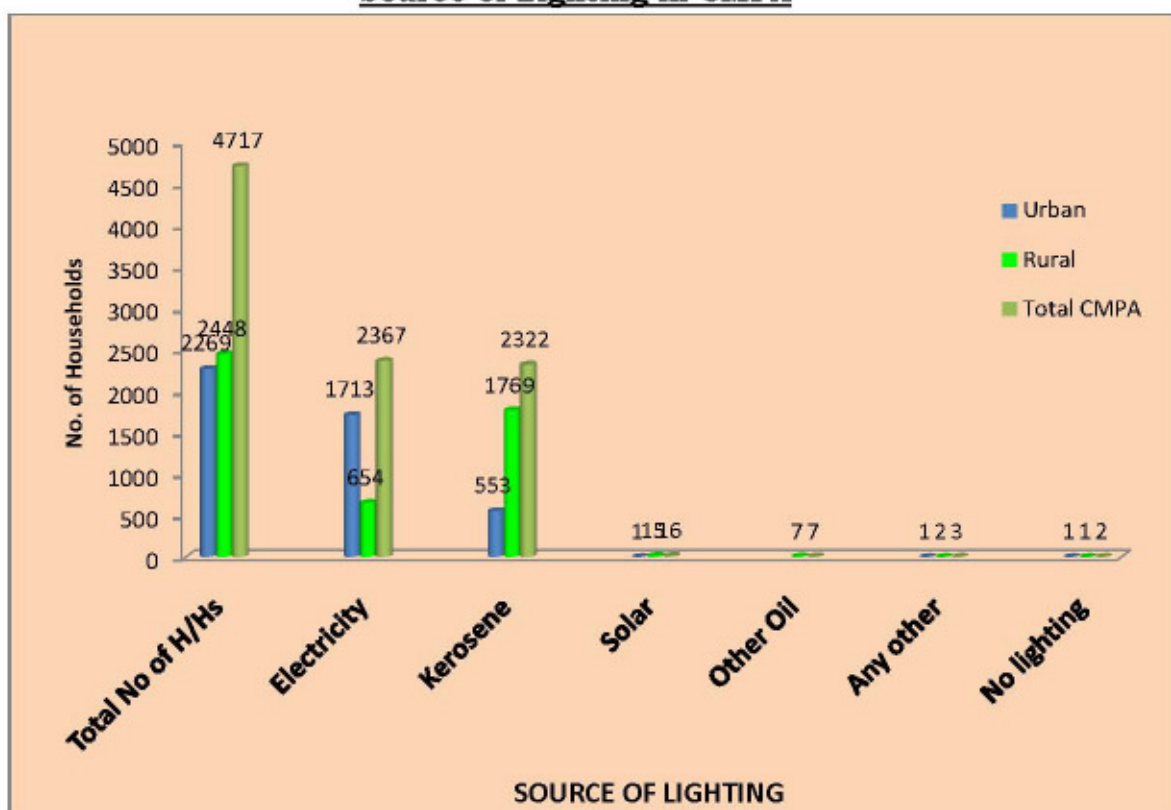


TABLE NO:- 13**Number And Percentage of House Hold by Main Source of Drinking Water**

Particulars	Chapakhowa Municipal Area		Rural Area		Master plan Area	
	No. of H/H's	%	No. of H/H's	%	No. of H/H's	%
Tap water from treated source	30	1.32	27	1.103	57	1.21
Tap water from untreated source	10	0.44	5	0.204	15	0.32
Covered Well	1	0.04	6	0.245	7	0.15
Un-covered Well	5	0.22	5	0.204	10	0.21
Hand pump	2172	95.72	2190	89.461	4362	92.47
Tubewell/ Borehole	11	0.48	118	4.820	129	2.73
Spring	0	0.00	3	0.123	3	0.06
River/canal	14	0.62	53	2.165	67	1.42
Tank/pond	0	0.00	5	0.204	5	0.11
Other sources	26	1.15	36	1.471	62	1.31
Total	2269	100	2448	100	4717	100

Source:- Census of India

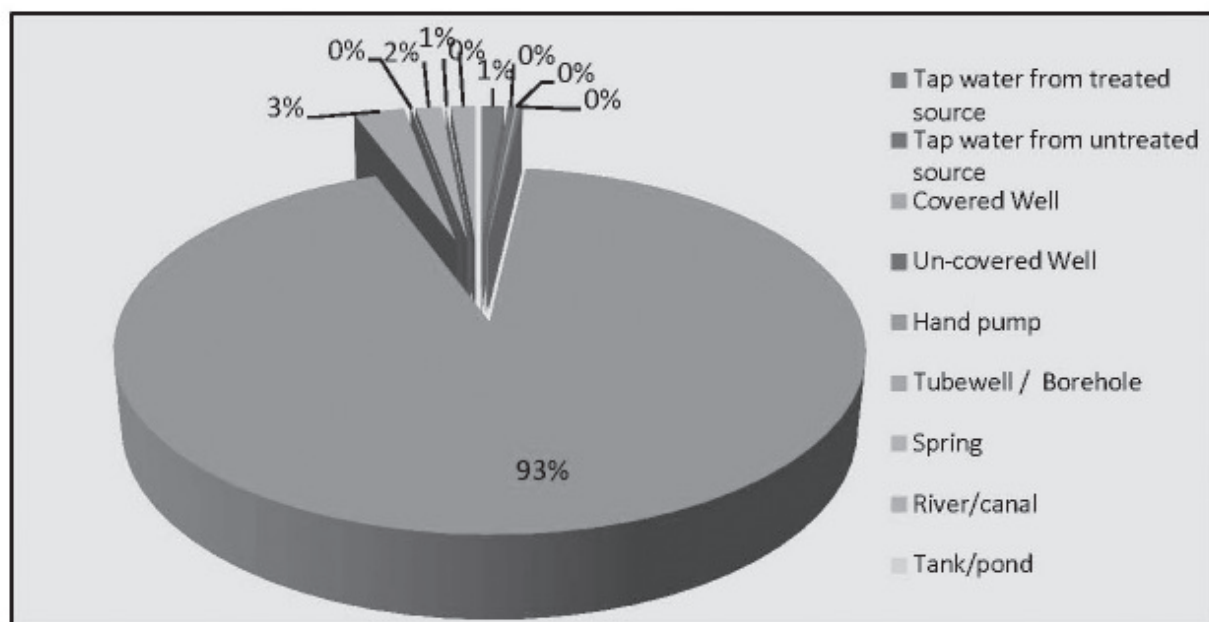
FIGURE :-14
Source of Drinking Water in CMPA

TABLE NO:- 14
Number and percentage of house hold by
Type of fuel used for cooking in CMPA

Particulars	Chapakhowa Municipal Area		Rural Area		Master plan Area	
	No. of Household	Percentage	No. of Household	Percentage	No. of Household	Percentage
Fire wood	836	36.84	2247	91.79	3083	65.36
Crop residue	16	0.71	19	0.78	35	0.74
Cowdung cake	1	0.04	3	0.12	4	0.08
Coal/lignite / Charcoal	3	0.13	0	0.00	3	0.06
Kerosene	22	0.97	1	0.04	23	0.49
LPG/PNG	1387	61.13	170	6.94	1557	33.01
Electricity	0	0.00	1	0.04	1	0.02
Bio Gas	0	0.00	1	0.04	1	0.02
Any other	0	0.00	1	0.04	1	0.02
No Cooking	4	0.18	5	0.20	9	0.19
Total	2269	100	2448	100	4717	100

Source:- Census of India

FIGURE :- 15
Type of Fuel Used for Cooking

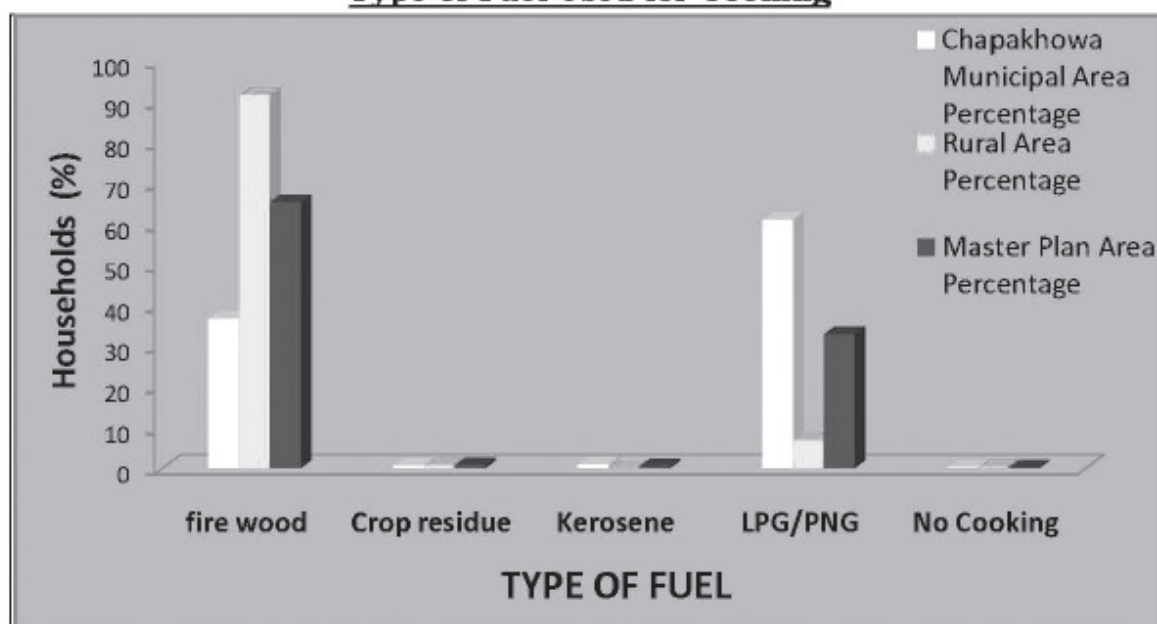


TABLE NO:- 15
Number and Percentage of House Hold Availing Banking Services and Number
of Household Having each of the Specified Assets.

Particulars	Chapakhowa Municipal Area		Rural Area		Master plan Area	
	No. of House hold	Percentage	No. of Household	Percentage	No. of Household	Percentage
Banking Service	1803	79.46	1088	44.44	2891	61.29
Radio	781	34.42	739	30.19	1520	32.22
TV	1344	59.23	382	15.60	1726	36.59
Computer/ Laptop with internet	21	0.93	7	0.29	28	0.59
Computer without internet	198	8.73	163	6.66	361	7.65
Land line telephone	53	2.34	19	0.78	72	1.53
Mobile	1662	73.25	919	37.54	2581	54.72
Both Land Line / Mobile	97	4.28	22	0.90	119	2.52
Bicycle	1467	64.65	1704	69.61	3171	67.22
Scooter / Motorcycle	543	23.93	165	6.74	708	15.01
Car/ Jeep/ Van	125	5.51	27	1.10	152	3.22
None of the specific Assests	219	9.65	460	18.79	679	14.39
Total	2269		2448		4717	

Source:- Census of India

FIGURE :- 16
No & Percentage H/H's Availing Banking Services and Specified Assets

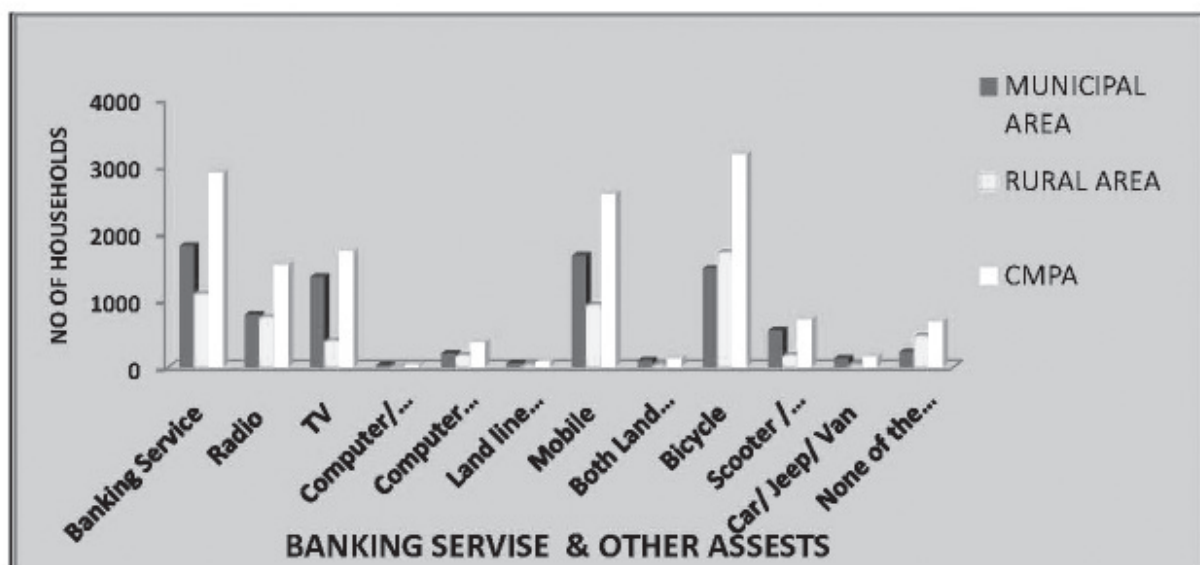


TABLE NO:-16
Number and Percentage of Household by type of Drainage Connectivity
for Waste Water Outlet

Name of area	Total No of Household	No of Percentage of Households by type of Drainage connectivity for waste water outlet					
		Closed Drain	%	Open drain	%	No drain	%
Urban	2269	24	1.06	241	10.60	2004	88.34
Rural	2448	16	0.65	129	5.25	2303	94.10
Total CMPA	4717	40	0.85	370	7.84	4307	91.31

Source:- Census of India

FIGURE :- 17
Drainage Connectivity

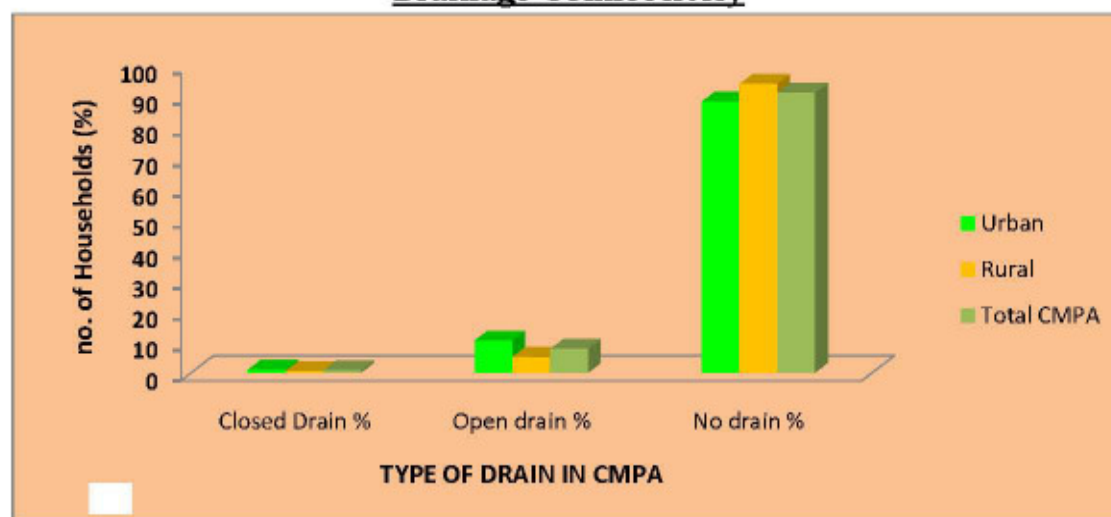
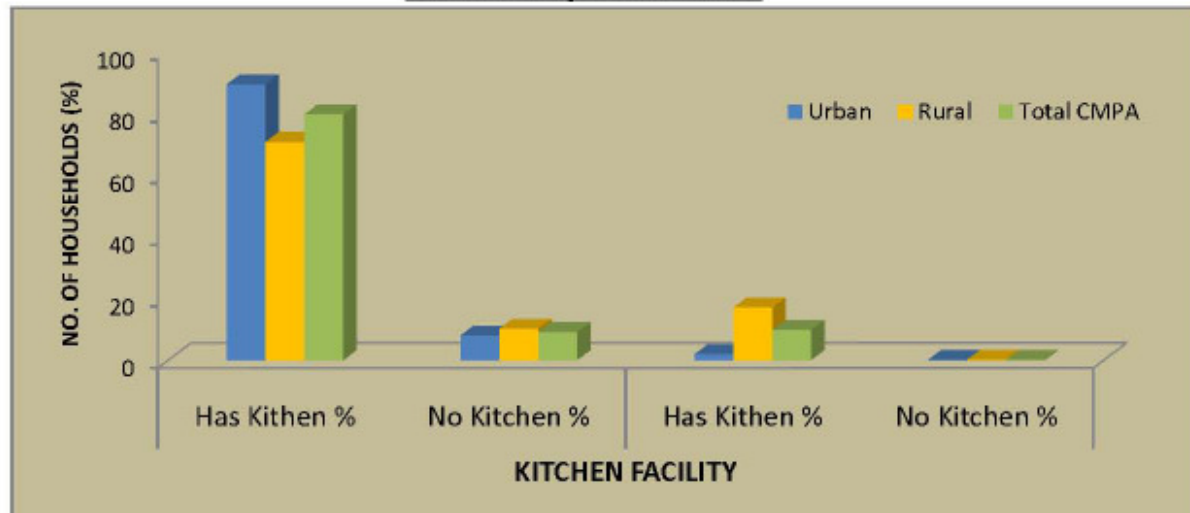


TABLE NO:-17
Number and Percentage of Household By Availability of Kitchen

Name of area	Total No of Household	Cooking inside house				Cooking outside house				No Cooking	%
		Has Kitchen	%	Does not have Kitchen	%	Has Kitchen	%	Does Not have Kitchen	%		
Urban	2269	2031	89.53	183	8.06	45	1.97	6	0.26	4	0.18
Rural	2448	1733	70.81	251	10.24	418	17.08	41	1.67	5	0.20
Total CMPA	4717	3764	79.8	434	9.20	463	9.82	47	0.99	9	0.19

Source:- Census of India

FIGURE:- 18
Availability of Kitchen



4.4 Slums- Squatters and Informal Housing Share

The slum in urban area is a common phenomenon in India but in Chapakhowa town its exception that presently no slum. But the concept of slum area in emerging town in India is a common phenomenon due to the natural growth of population and migration of labour class people to the town. Though at present in Chapakhowa there is no slum as per the information received from Chapakhowa municipal board, inspite of that there is an every possibility of the creation of slum in the town near future due to the increase of the population and industrialization and as such it is necessary for the concern authority to stop such informal habitat in future.

4.5 Housing Stock, Shortage and Need Assessment

There are about 2269 no. of houses within the Chapakhowa municipal area and 2448 houses in rural areas and as a whole there are 4717 nos. of houses in Chapakhowa in 2011. Out of this approximately 85% houses i.e. 4009 nos. of houses are used for residential purposes. Since there are 23182 persons in CMPA in the year 2011 and the above housing figure shows that an average of 5.7% per house, housing accommodation is available for 22851 persons and for the remaining 331 person's additional housing accommodation of 58 nos. are required in the year 2011 itself. The remaining 708 nos. or 15% of houses are used for commercial, public- semipublic, institutional, household industry etc.

To find out the housing need for future a detailed study of family size level of obsolescence, existing shortage etc. are necessary. However, on the basis of projected population and household size of 5 (Five) persons, the gross housing need is assessed below:

TABLE NO:- 18
Housing requirement in Chapakhowa master plan
area upto 2041

Year	Projected population	Gross Housing Requirement
2021	25757	5151
2031	36468	5939
2041	47117	9423

Source:-T&CP, DBRG

FIGURE :- 19
Housing Projection & Requirement



Source: Estimated by Town & Country Planning, Dibrugarh.

It is estimated that the total housing requirement for residential purposed upto 2041 in the master plan area are 9423 nos. of houses for the projected population of 47117 persons. Since, the existing houses for the residential purposes are 4009 nos. so additional requirement for the increasing population will be 5414 nos. of houses in the year 2041. The plan therefore has paid attention to the magnitude of housing problem and recommended that necessary housing schemes by various public, semi-public and private agencies with the help of the Govt. and private organizations should be undertaken with the frameworks of the master plan. The private developers may come forward to solve this problem.

CHAPTER-5

5 TRANSPORTATION

5.1 Network of Roads

Urban road network is considered as engines of economic growth. However, the roads of Chapakhowa urban area are very narrow and shoulder width is insufficient to accommodate the present traffic volume for easy movement except N.H.-115 and there is also little scope for the widening. Earlier the connectivity to Chapakhowa town from Tinsukia was through ferry service only as Brahmaputra River separates these areas in two parts and ferry takes 40 to 50 minutes to cross the river.

In, May 2017, Dhola-Sadiya bridge named as Bhupen Hazarikasetu was inaugurated by Hon'ble Prime Minister and the length of bridge is 9.5 km and longest river bridge in India. The people residing in Dhola-Sadiya and Arunachal Pradesh got immense relief and pleasure after opening of new bridge and transportation get major boost as people were suffering from many decades and doing hardship as connectivity to the main land was very poor.

The Dhola-Sadiya Bridge will enhance all weather connectivity between upper Assam and eastern parts of Arunachal Pradesh. The bridge will also reduce the distance from Rupai on NH-37 in Assam to Meka/Roing on NH-52 in Arunachal Pradesh



by 165km, cutting down on travel time from six hours to just one hour.

The roads within the residential areas are mostly widen and planned by Sadiyasub- division after its establishment.

For smooth traffic movement in Chapakhowa, the plan provides 210.04 hectare of land in the land use map, which constitutes 15.53% of the total developed area. In this plan, emphasis has been given on the following aspects for effective transportation system in Chapakhowa master plan area.

- Optimum use of the existing transportation system through improved traffic operation and controls.
- Improvement of the existing road network through strengthening and widening.
- Provision for adequate parking facilities.
- Development of new roads and other transport facilities.

The plan recommends development of road infrastructure as per table given below:

TABLE NO :-19
Category of Roads

Category of roads	Name	Existing Width	Recomm ended width
Major	Sadiya – Chapakhowa road NH.115	-	70' to 80'
Arterial	Medical Chariali road (Stadium & BuraBuri than)	25'	35' to 40'
	SantipurChariali	25'	35' to 40 ' '
	Fire Brigade Chariali road (East – West side)	25'	35' to 40 ' '
Sub- Arterial	SDO civil road	30'	30' to 40'
	Sadiya H.S Chariali road (East – West side)	30'	30' to 40'
Other Road	-----		Minimum 20' and 12' for Single plot.

Source:-T&CP, Dibrugarh

5.2 Overview of Critical Roads and Improvement

Chapakhowa is well connected with the rest of the country by roads. The National Highway have connected Chapakhowa with other places as shown below: -

- a) Chapakhowa to Digboi, Margherita, Ledo via Makum (NH- 115 , NH- 315, NH- 215)
- b) Chapakhowa to Tinsukia (NH- 115, NH- 15)
- c) Chapakhowa to Dibrugarh via Tinsukia (NH- 115, NH- 15 NH-215)
- d) Chapakhowa to Jagun via Doomdoma, Tingrai, Digboi
- e) Chapakhowa to Roing of Arunachal Pradesh(NH-115, NH-313)
- f) Chapakhowa to Namsai&Tezu via Talap (NH-115, NH- 15, NH- 13)

Chapakhowa town doesn't have railway network the passengers has to travel to Tinsukia town and presently railway network available from Talap to Guwahati. The railway station of Tinsukia facilitates the passengers to travel to Guwahati via Tinsukia and also outside Assam. Beside plying of taxis, buses, winger and trucks are playing a major role in transporting passengers and goods to and from Chapakhowa.

. The buses and small vehicles plying through Chapakhowa town follow the following routes:

- a) Tezu of Arunachal Pradesh to Roing via Chapakhowa
- b) Roing of Arunachal Pradesh to Dibrugarh via Chapakhowa.
- c) Chapakhowa to Guwahati via Tinsukia (night service)

5.3 Bus Transport Terminals

At present both ASTC and private bus stations are located along the road side of N.H-115at Shantipur outside the Chapakhowa town at a distance of 6.00 km which is situated near gateway of (Shanitpur Gate) Arunachal Pradesh State.



At present Taxi, Auto and Bus stand near Fire Station and is located opposite to the Chapakhowa

government field by the side of NH-115. This stand is also creating congestion and



obstruction to the smooth flow of traffic during peak hours.

In Chapakhowa town the surface condition of the road is much better than other towns and the access roads widen in CMPA. Most of the traffic generated from Govt. L.P School, Sadiyato Fire station to Medical chariali. But the entire area does not have organized parking space.

Keeping in view the above, the plan recommends expansion and renovation of the existing bus cum auto stand in the east of master plan area. The sites for the above are shown in the proposed land use plan.

5.4 Freight Zones Logistics

Presently there is no truck terminus at Chapakhowa. The loading and unloading from trucks are carried out by the side of road at NH. 115 in CMPA.

The plan proposes one truck terminus at 1 No. Chapakhowa at NH- 115.

5.5 Footpaths and Bicycle Tracks

Footpaths are normally designed for pedestrian for pleasant and comfortable walking. In Chapakhowa there is no any footpath in the town. There is no cycle track in the town.

Exclusive lane for slow moving vehicles, pedestrians along with spaces for street vendors are also essential for overall development of a town. The hawkers and street vendors also play an important role in urban economy. The notification of vending and no vending zone by

the authority is mandatory as per the provisions of the Street Vendors Act, 2014. This improves the capacity of the lanes designed for motorized vehicles and increases the safety of slow moving vehicles and pedestrians

The plan suggest construction of footpath in both sides of all the roads in the town by the concerned authority. The plan also earmarks cycle track in the NH-115 road and Civil Hospital Chariali towards Bura Burithan.

The width of footpath as per URDPFI guidelines is follows:

TABLE NO :-20
Width of Footpath

Sl. No	Description	Width(mtr)
1	Minimum free walkway width in residential/mixed use areas	1.8
2	Commercial/Mixed Use Areas	2.5

The URDPFI Guideline for cycle /NMT track are given in the following table:

TABLE NO:- 21
Cycle Track

Sl. No.	Arterial Roads	SUB Arterial Roads	Distributary Road	Access Roads
Non-Motorized Vehicle	Segregated cycle track	Segregated cycle track	Cycle lane	Mixed/traffic
Location	Between carriageway or street parking and footpath on either edge of the carriageway	Between carriageway or street parking and footpath on either edge of the carriageway	On the edge of the carriage ,adjacent to the footpath or parking	Not applicable
Gradient	1:12-1:20	1:12-1:20	1:12-1:20	1:12-1:20
Lane width	2.2 to 5.0m	2.2 to 5.0m	2.2 to 5.0m	Mixed with motorized vehicular traffic
Minimum width	2.5 for a two lane cycle track and 1.9m for a common cycle track and footpath	2.0 for a two lane cycle track and 1.7m for a common cycle track and footpath	1.5m	1m(painted)

5.6 Parking

At present, there is no organized parking space for the cars, two wheelers in the market area. The cars are generally parked on the main road of the town. The roads are already overcrowded with traffic and further encroachment on road surface by cars and two wheelers has resulted obstructed traffic congestion.

The plan proposes multi parking and auto stand at NH - 115 at existing auto stand.

The recommended Equivalent Car Space (ECS) required for different type of vehicles as per **URDPFI** guidelines are given in the following table for design of parking areas.

TABLE NO:-22
Parking Space

Sl. No	Vehicle type	ECS
1	Car /taxi	1.00
2	Two Wheeler	0.25
3	Auto Rickshaw	0.50
4	Bicycle	0.10
5	Trucks/Buses	2.5
6	Emergency Vehicles	2.5
7	Rickshaw	0.8

5.7 Areas with Major Traffic Congestion and Parking Issue, Accident Prone Area

The maximum inter -town traffic volume is generated on the road starting from Govt. L.P School area and moving towards Medical Chariali N.H- 115. This is the most vital link for both to the town and the rest of the district. The second inter town traffic generating road is Medical Chariali (Bura Buri than).

The presence mixed traffic has accelerated traffic congestion in Chapakhowa. The town has mainly two accident prone areas, namely the area Fire Brigade and Medical Chariali. Therefore, proper road signage and marking in the road in these areas is the need of the hour.

The heavy vehicles belonging to coal and tea industry ply daily through the town is also a cause of concern for public safety.

5.8 Improvement of Rotary and Junctions

The town does not have a road rotary and plan does not foresee its requirement. However, improvement of all road junctions as per IRC guidelines is urgent and important for improving the traffic scenario.

5.9 Street Lighting and Proposed Improvement Plan

The town is illuminated by Chapakhowa municipality with 10 nos. high mast light, 300 nos. street light for the convenience of the people.



5.10 Signage: Availability and Requirement

The ULB, traffic and other concerned departments will assess the requirement of signage and accordingly install the signage as per the rules and regulations for the beautification of the town as well as smooth flow of traffic and public convenience.

5.11 Major Proposals

- I. The plan proposes multi parking and auto stand at NH - 115 at existing auto stand as showed in the proposed land use map.
- II. The authority concern may develop existing bus stand with all facilities required for commuters.
- III. Considering the scenic beauty of the town, the plan recommends plantation along the major roads and development of traffic points to augment the aesthetic beauty of the town.

CHAPTER 6**6 INFRASTRUCTURE, PUBLIC UTILITY & SERVICES****6.1 Physical Infrastructure****6.1.1 Water Supply**

In municipality area, there is two piped water supply system situated near Seauj Nagar and Uday Nagar supplying water to some parts of town. For the rest of the town, the only source of water is tube well and the ring wells as ground water and surface water is readily available at Chapakhowa town and its adjoining areas. Though the tube well and ring well are efficiently functioning, it will no longer be considered as free from contamination due to presence of a number of pit latrines. A comprehensive water supply scheme with treatment plant covering the population up to 2041 is the need of the hour. At present, the government has taken initiative to provide drinking water supply under Jal Jeevan Mission at Chapakhowa town.

The objective of a public protected water supply system is to supply safe and clean water in adequate quantity, conveniently and as economically as possible.

Rising demand of water due to rapid urbanization is putting enormous



stress while planning the water supply system for an area; it is evident to consider water conservation aspects, which may be possible through optimal use of available water resources, prevention and control of water and effective demand management.

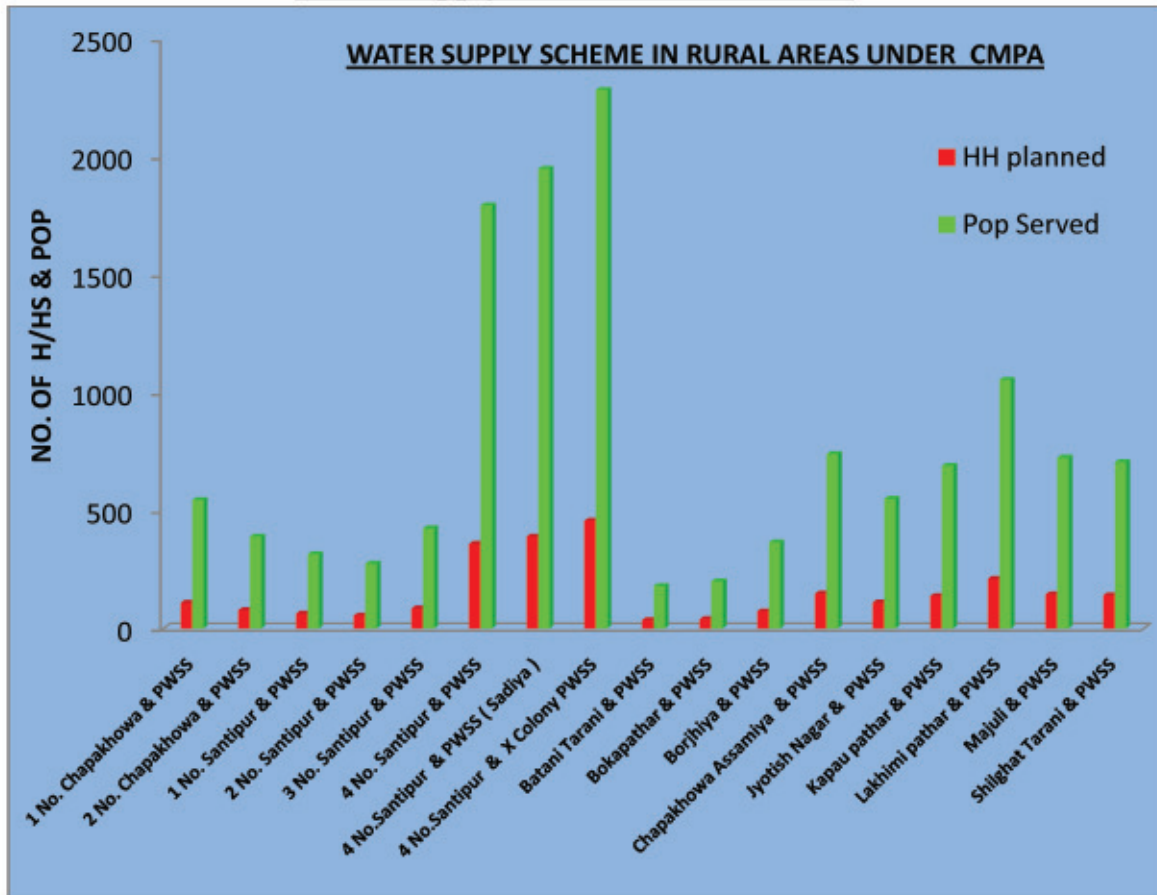
Presently, PHE is executing a water supply scheme at Chapakhowa under Jal Jeevan Mission in rural areas as mentioned below :-

TABLE NO:- 23
Pipe Water Supply Scheme

Name of Village & Water Supply Scheme	Scheme Type	HH planned	Pop Served	Provided tap connection
1 No. Chapakhowa& PWSS	New	109	545	
2 No. Chapakhowa& PWSS	New	78	390	
1 No. Santipur& PWSS	Retrofitting	63	315	202 HH
2 No. Santipur& PWSS	Retrofitting	55	275	
3 No. Santipur& PWSS	Retrofitting	85	425	
4 No. Santipur& PWSS	New	359	1795	
4 No.Santipur& PWSS (Sadiya)	Retrofitting	390	1950	385
4 No.Santipur& X Colony PWSS	New	457	2285	
BataniTarani& PWSS	New	36	180	
Bokapathar& PWSS	New	40	200	
Borjhiya& PWSS	New	73	365	
ChapakhowaAssamiya& PWSS	New	148	740	
Jyotish Nagar & PWSS	Retrofitting	110	550	110
Kapaupathar& PWSS	New	138	690	
Lakhimipathar& PWSS	New	211	1055	
Majuli& PWSS	Retrofitting	145	725	145
ShilghatTarani& PWSS	Retrofitting	141	705	141
Chapakhowa PWSS	PHE will hand over the scheme to Chapakhowa Municipality			

Source :- EE, PHE, Tinsukia

FIGURE :-20
Water Supply Scheme in Rural Area



Under Chapakhowa master plan area total 983 household got tap water connection particularly in rural areas and total six (6) nos. of PWSS are planned for retrofitting and eighteen (18) nos of new piped water supply scheme are planned under Jal Jeevan Mission under PHE. In urban area, Housing & Urban Affairs Department has taken initiative for water supply scheme under Jal Jeeva Mission at Chapakhowa municipality. Assam Urban Water Supply & Sewerage Board (AUWS&SB) in collaboration with Municipality also proposed a water scheme at Milan Nagar.



6.1.2 URDPFI Guideline's for Water Requirement

As per URDPFI guidelines the norms for water requirement for institutional buildings are given below:-

TABLE NO:- 24
Requirement for Institutional Buildings

Sl.No.	Institutions	Liters per head per day
1.	Hospitals (including laundry)	
a)	No. of beds exceeding 100	450 (per bed)
b)	No. of beds not exceeding 1000	350 (per bed)
2.	Hotels	180 (per bed)
3.	Hostels	135
4	Boarding Schools	135
5	Restaurants	70 (per seat)
6	Day school / colleges	45
7	Offices	45
8	Cinema, concert halls and theater	45

In addition to the above the fire- fighting water demand is also as a function of population. It is desirable that one-third of firefighting requirements from part of the service storage. The balance requirement may be distributed to several state tanks of strategic points. These strategic points may be filled from nearby pond streams or canals by water tanker's wherever feasible.

The plan also recommends preparation of a comprehensive potable water supply scheme as per guideline of CPHEEO manual of Govt. of India to cater the needs of the estimated population of 94194 up to 2041 by a competent authority as the present scheme is designed for municipality area only.

6.1.3 Drainage system

The drainage system at Chapakhowa town is relatively good compared to nearby towns. This is due to presence of natural channels in the both sides of town connecting to Jiya River. The entire master plan area is under the Basin of Kundil River. The undulating surface also eases out the rain and sewerage water in to the river channels. The NH-115 divides the entire master plan area in to two sub basin of main Kundil basin. However, in the plain area, namely the Govt. field area and other peripheral area, the existing kutchadrains do not have sufficient cross section to drain out surface run off after heavy rainfall resulting in to water logging. Presently, a project on improvement on storm water drainage of Chapakhowa town is undertaken by the Chapakhowa municipality, to ease out the water logging and artificial

flood problem of plain area. At present, Chapakhowa municipal having 2.1 Km closed drain and 2.0 Km open drain and under SOPD 2.0 km drain taken presently and work is under progress. The plan recommends drainage master plans for the entire master plan area.



DRAIN NEAR CHAPAKHOWA MUNICIPALITY

DRAIN NEAR LACHIT STADIUM

6.1.4 Sanitation

In Chapakhowa master plan area only 12% household use septic tank as per 2011 Census. The percentage of household who used septic tank is much higher in urban area than in rural area. In the Master plan area, 40% of household as open pit or other means which are not conducive for health and environment. This type of condition is prevailed in all over India. As such, The Government of India in the year 2014 introduced the Swachh Bharat Mission (SBM) which is being implemented by the Ministry of Urban development and Ministry of Drinking and sanitation for urban and rural areas respectively. The main objective of the mission is – elimination of open defecation, eradication of manual scavenging, modern and scientific Municipal Solid Waste Management, to effect behavioral changed regarding healthy sanitation practices, generate awareness about sanitation and its linkage with public health, capacity augmentation for ULB's.

Swachh Bharat Mission (SBM) will improve the health conditions of every Indians. This practice will be able to prevent many types of diseases in the country and we will be able to have a happy and healthy society. SBM can be able to build a better eco-friendly environment in the country and can give better life to our upcoming generations.

SBM will also help in generating employment through tourism and boost India's Gross Domestic Product (GDP).

Unhygienic condition's is one of the major root causes of diseases/illness. Any disease or illness has financial impact both in terms of expenditure and potential revenue earning. As such, SBM will have positive impact on India's health care sector. SBM will plug the

loss due to unhygienic and lacks of cleanliness and will help to ease burden on existing health care facilities.

SBM will lead to Health India which in turn increases productivity of Indians. High productivity means high earning potential. Under current economic conditions, India desperately need Foreign Direct Investment (FDI) for this the country must be clean.

SBM will benefit socially and financially each & every citizen of India. If we want financial growth then we have to collectively make. SBM is a roaring success in future. SBM is one of the critical links towards economic success of India.

Under SBM it is estimated that about 20% of the urban household in towns, who are currently practicing open defecation are likely to use community toilets as a solution due to land and space constraints in constructing individual household latrines. For this component beneficiaries shall be groups of household in urban area whose members practice open defecation and who do not have access of the household toilets and for whom the construction of individual household toilet is not feasible.

Under SBM, ULB's will ensure that a sufficient number of public toiletto be constructed in the town. All prominent places within the town attracting floating population should be covered. Cares should be taken to ensure that these facilities have adequate provision for man, woman and facilities for the disabled (e.g. ramp provision, Braille, signage etc.) wherever necessary.

Presently there are 5(five) public toilets in Chapakhowa and located at Govt. feild, 2 (two) Nos at Daily Bazar, Bus stand, Stadium. These toilets to some extent benefit the outside peoples who come to the Chapakhowa for marketing and health services. The short falls of public toilet in the planning area will be fulfilled by SBM in coming days.

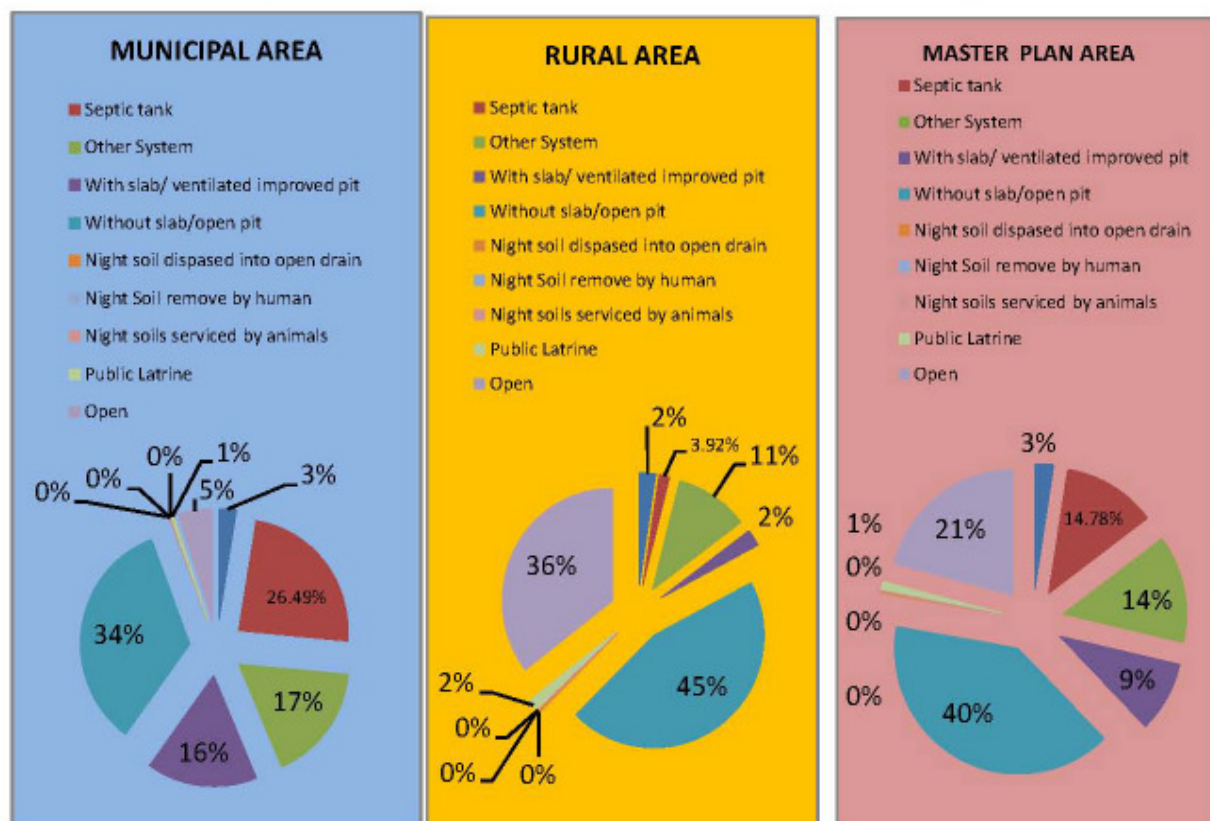


TABLE NO :- 25
Number and Percentage of House Hold by type of Latrine Facility.

Particulars	Chapakhowa Municipal Area		Rural Area		Master plan Area	
	No. of House hold	%	No. of House hold	%	No. of House hold	%
Septic tank	601	26.49	96	3.92	697	14.78
Other System	389	17.14	265	10.83	654	13.86
With slab/ ventilated improved pit	371	16.35	60	2.45	431	9.14
Without slab/open pit	779	34.33	1108	45.26	1887	40.00
Night soil disposed into open drain	2	0.09	9	0.37	11	0.23
Night Soil remove by human	0	0.00	0	0.00	0	0.00
Night soils serviced by animals	3	0.13	1	0.04	4	0.08
Public Latrine	8	0.35	39	1.59	47	1.00
Open	116	5.11	870	35.54	986	20.90
Total	2269	100	2448	100	4717	100

Source :- Census of India

FIGURE :-21
HOUSEHOLD BY TYPE OF LATRINE FACILITY



6.1.5 URDPFI Guidelines for Public Toilets

The general standard for public toilets in public area and modified norms for public toilets in public places and roads recommended in URDPFI guideline are given below:-

TABLE NO:- 26
Norms for public toilets in public area.

TYPE	NORMS FOR TOILETS
Public toilets	On road and for open areas every 1 Km. including parks, open air theater, car parks and fuel station. Toilets shall be disabled friendly and in 50 : 50 ratio (M / F)
Signage	Signboards on main streets shall given directions and mention the distance to reach the nearest public convenience of visitors. Helpline number shall be pasted on all toilets for complaints / queries
Modes	Pay and Use or free in pay and use toilets entry is allowed on payment to the attendant.
Maintenance / Cleaning	The toilets have both men and women attendants. Alternatively automatic cleaning cycle covering flush, toilet bowl, seat, hand wash basin, disinfecting of floor and complete drying after each use can be adopted. Public toilets shall be open 24 hrs.

The urban local body can follow the above norms for construction the public toilet and maintenance thereafter.

6.1.6 Network Sewerage

Like the rest of the towns of the state, Chapakhowa also does not have sewerage network and treatment plant. Human night soil is generally disposed at conventional septic tanks or low cost sanitary pits. Till the execution of the sewerage scheme, it is recommended to encourage the people to construct sanitary latrines of their own and to cover poor families. Under Swachh Bharat Mission the use of service latrine should be banned as per law for the health and hygiene of the community.

6.1.7 Solid Waste Management

Solid Waste Management (SWM) is a process which involves collecting and disposing of solid wastes is unavoidable by products of human activities. Municipal Solid Waste (MSW) in India which includes garbage, metals, bottle or glass, plastics, paper and fabric have been increasing in recent years because of population increase, rapid urbanisation, technology and improper through-way culture of people. In general, the MSWM is the collection, treatment and disposal of solid waste generated by all categories of municipal population in an environmentally, friendly and socially satisfactory manner using the available resources most efficiently. Urban bodies are generally responsible for providing the SWM services and nearly all local government laws give exclusive mandate of collecting all the wastes disposed outside homes or establishments. Effective solid waste collection and disposal is a vital component of public service provisions and should take priority particularly in emerging towns. Because, failing to have such services can result in many unfavorable outcomes in the long run and this may have serious adverse effect on public health and the environment.

The generation of solid waste has become an increasing environmental and public health problem in every urban area of India. The most urban areas of India rapid urbanisation and population growth has produced tremendous amounts of solid and liquid wastes that degrade the environment and destroy the resources. In the past, most policies and frameworks governing solid waste management in India have been directed at the service providers and less attention has been paid to the demand side aspect of the problem. In Chapakhowa MB with an area of approx. 5.41 Sq. Km. generates 4 (Four) metric tones of waste. Thus, under such circumstances it is very essential for environmentally safe and hygienic solid waste management system in the town in order to explore the possibility of community participation for a better Municipal Solid Waste Management System (MSWMS).

At present garbage of Chapakhowa town is dumped near Gurung Bastiina plot of land measuring 6 Bighas & 1 Bigha for Material Recovery Facility (MRF) is allocated by the Government. The main concern of present



dumping area is that river Kundil passes by and it may cause flooding to the place due to its frequent changing of its course, so the situation only stands to worsen unless the concerned authorities give a serious thought to the problem. Accordingly, this plan earmarked a low lying at 2. No Chapakhowa for Solid Waste Management of Chapakhowa master plan area as per Solid Waste Management Amendment Rules 2020.

The town generates biodegradable solid waste besides plastic waste and malted wastes. So, this plan has suggested a few steps for scientific solid waste management system in Master plan area. This includes segregation of bio-degradable and non-biodegradable solid waste at source, construction of compact pits at all residential houses in order to produce compost wherever feasible, introduction of specific litter bins for collection of segregated bio-biodegradable and non-biodegradable solid waste for soil conditioning and recycling purpose respectively, and doing away with the system of dust bins along roads which is a major cause of pollution.

The duties and responsibilities of ULB's as per revised Solid Waste Management rules of 2016& amendment rules 2021 are given below:

- (i) The ULB's shall prepare a Solid Waste Management plan as per state policy within six (6) months.
- (ii) Arrange for door to door collection of segregated solid waste; integrate rag pickers/informal waste collectors in solid waste management.
- (iii) Frame bye-laws incorporating the provisions of these rules within one year, prescribed user fee.
- (iv) Direct waste generators not to litter and to segregate the waste at source and handover segregated waste to authorized waste pickers, the waste collector authorized by the ULB.
- (v) Set up material recovery facilities or secondary storage facilities and provide easy access to waste pickers and recyclers for collection of segregated recyclable waste.
- (vi) Established waste deposition center for domestic hazardous waste and ensure safe storage and transportation of the domestic hazardous waste to the hazardous waste disposal facility or as may be directed by the state pollution control board.
- (vii) Direct street sweepers not to burn tree leaves collected from street sweeping and store them separately and hand over to the waste collectors or agency authorized by ULB.
- (viii) Provide training on solid waste management to waste pickers and waste collectors.
- (ix) Promote setting up of decentralized compost plant or bio – meth nation plant at suitable locations in the markets or in the vicinity of markets ensuring hygienic conditions.
- (x) Collect separately waste from sweeping of streets, lanes and by-lanes daily or on alternate days or twice a week depending on the density of population, commercial activity and local situation.

- (xi) Involve communities in waste management and promotion of home composting, bio – gas generation, decentralized processing of waste at community level subject to control of odour and maintenance of hygienic conditions around the facilities.
- (xii) Educate workers including contract workers and supervisors for door to door collection of segregated waste and transporting the unmixed waste during primary and secondary transportation to processing or disposal facility.
- (xiii) Ensure that the operator of a facility provides personal protection equipment including uniform, fluorescent jacket, hand gloves, rain coats, appropriate foot wear and masks to all workers handling solid waste and the same are used by the work force.
- (xiv) Create public awareness on solid waste management.
- (xv) The Environment Ministry has notified the Plastic Waste Management Amendment Rules, 2021, which prohibits identified single-use plastic items which have low utility and high littering potential by 2022.

6.1.8 Electrical Sub –Station and Major Transformers

Power requirement of Chapakhowa master plan area is meeting by the ASEB grid. There is total 1713 electric connection in the town and 556 households are not electrically connected as per 2011 census. Earlier Chapakhowa is also facing the problem of acute scarcity of electric power like the other towns of the state. In peak hours load shedding for one or two hours is a way of life for its residents. Now, Chapakhowa having two sub- station located on the road at Medical Chariali towards Bura Buri than and providing sufficient power supply to town and peripheral areas.



6.2 Social Infrastructure

6.2.1 Education facilities

The progress and development of a place is closely related to expansion and development of education. Presently, the Chapakhowa master plan area is having 1 (One) College, 1 (One) Govt. Higher Secondary School & 1 (One) Pvt. Higher Secondary School, 7 (Seven) High School & 2 (two) Pvt. High School, 5 (Five) ME. School, 21 (Twenty one) Govt. L.P School and 1 (One) Pvt. L.P School.

Sadiya College was established in the year 1982. It is a provincialised college affiliated to Dibrugarh University and recognized by University Grants Commission. The college having laboratories, library a multipurpose playground, canteen, hostel, running and drinking water facilities with digital classrooms .



Under Chapakhowa master plan a newly Industrial Training Institute (ITI) at Maghalpuri, P.O-Islampur, Sadiya was opened for technical skill development and empower the youth of local region and it have been set up under Public Private Partnership (PPP) Mode collaborating with the Govt. of Assam.



6.2.2 URDPFI Guideline for Education facilities**TABLE NO:- 27****Norms for Pre-Primary Nursery School to Higher Education**

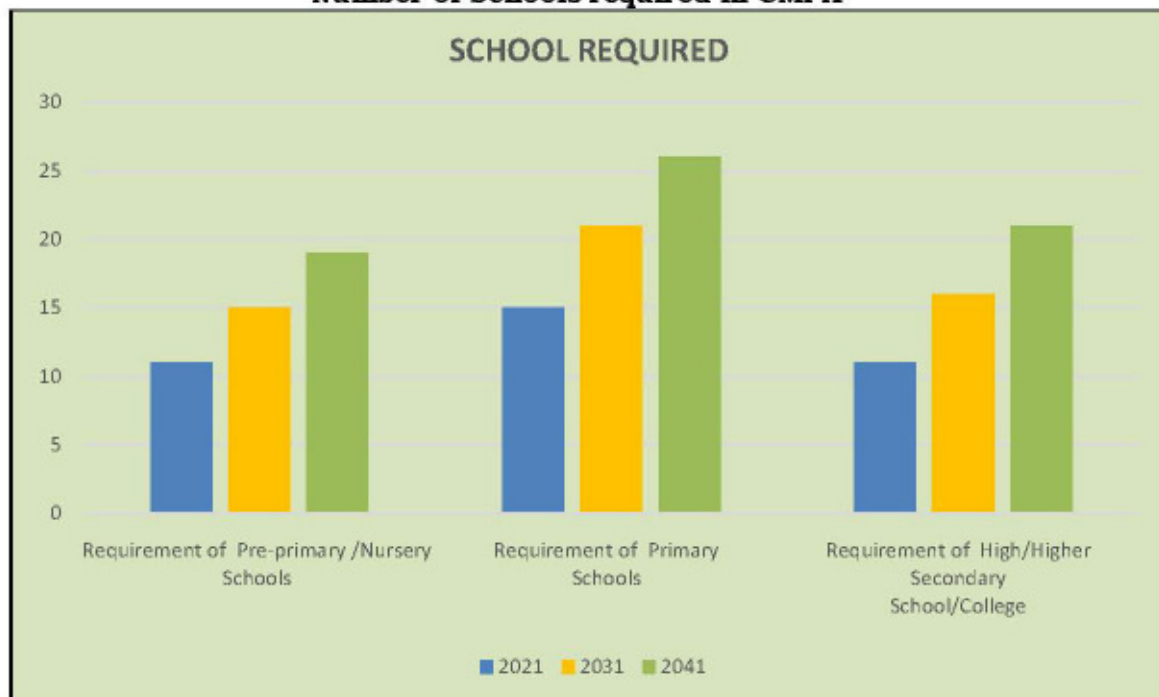
Sl. No	Category	Student Strength	Population served per unit	Area Requirement	Other Controls
1	Pre- Primary Nursery School	-	2500	0.08 Ha	To be located near park
2	Primary School (Class I to V)	500	5000	Area per School = 0.40 Hec. A) School building area = 0.20 Hec. B) Play field area = 0.20 Hec.	Playfield area with a minimum of 18 m X 36 m to be ensured on
3	Senior Secondary School (VI to XII)	1000	7500	Area per School = 1.80 Hec. A) School building area = 0.60 Hec. B) Play field area = 1.00 Hec. C) Parking area = 0.20 Hec.	Playfield area with a minimum of 68 m X 126 m to be ensured on effective play.
4	Integrated School without hostel facility (Class I to XII)	1500	90000 To 1 Lakh	Area per School = 3.50 Hec. A) School building area = 0.70 Hec. B) Play field area = 2.50 Hec. C) Parking area = 0.30 Hec.	To be located near a sport facility
5	Integrated School with hostel facility (Class I to XII)	1500	90000 to 1 Lakh	Area per School = 3.90 Hec. A) School building area = 0.70 Hec. B) Play field area = 2.50 Hec. C) Parking area = 0.30 Hec. D) Residential area = 0.40 Hec.	To be located near a sport facility
6	School for Physically Challenged	400	45000	Area per School = 0.70 Hec. A) School building area = 0.20Hec. B) Play field area = 0.30 Hec. C) Parking area = 0.20 Hec.	To be located near park or sport facilities
7	College	1000 To 1500	1.25 Lakhs	Area per School = 5.00 Hec. A) School building area = 1.80 Hec. B) Playfield area = 2.50 Hec. C) Parking area = 0.30 Hec. D) Residential area = 0.30 Hec.	

TABLE NO:- 28
School Required In CMPA Upto 2041

YEAR	PROJECTED POPULATION	Pre-primary /Nursery Student strength-	Requirement of Pre-primary /Nursery Schools (100 students per school)	Primary Student strength-	Requirement of Primary Schools (200 students per school)	High/Higher Secondary School/College Student strength-	Requirement of High/Higher Secondary School/College (500 students per school)
2021	25757	1030	11	2833	15	5666	11
2031	36468	1459	15	4011	21	8023	16
2041	47117	1885	19	5182	26	10366	21

Source :-T&CP, Dibrugarh

FIGURE :-22
Number of Schools required in CMPA



Source : Estimated by Town & Country Planning, Assam, Dibrugarh

The shortage of schools in the plan area, to some extent has been fulfilled by the private institutions at present and it is also hope that in the future, private institutions will play an important role to mitigate the shortage of primary schools as well as High and Higher Secondary schools.

6.2.3 Health Care facilities

In Chapakhowa in addition to the existing Civil hospital, a new 100 bed Civil Hospital was inaugurated on 23 Feb 2021 with an estimate cost of Rs 20.50 Cr. In this new Civil hospital Block- A having an OPD counter, Minor OT, immunization room, dental room, dispensary, general indoor facilities for patients, having laboratory, sonography room, blood bank, X-Ray room, Baby room, a septic Labour room and maternity room, gynecology, maternity OPD, pediatric and neonatal stabilization unit etc. In Chapakhowa town, civil hospital plays a major role to provide health facilities not only to the region but also people of Arunachal Pradesh also. CMPA area having 2 (two) Sub Center's, 2 (two) Health Center and 1 (one) Primary Health Center, 1 (one) CHC.



URDPFI Guideline for Health Care Facilities

In the health care facilities the size of a hospital depends upon the hospital bed requirement, which in turns is a function of the size of the population it serves. As per URDPFI guideline the calculation of number of beds is based on:-

- A) Annual rate of admission as 1 per 50 population
- B) Average length of stay in a hospital as 5 days.

Since the projected population for Chapakhowa master plan up to the Year 2041 is 47117 as such, the number of beds required for the said population is :-

- i) No. of beds days per year = $(47117 \times 1/50) \times 5 = 4711$
- ii) No. of beds required with = $4711 / 365 = 13$
100% Occupancy

The classification of healthcare facilities as URDPFI guideline is given in the following table:-

TABLE NO:- 29
Healthcare Facilities

Sl. No	Category	No. of Beds	Population served per	Area Requirement
1	Dispensary	-	15000	0.08 to 0.12 Ha
2	Nursing home, Child Welfare & Maternity	25 to 30 beds	45000 to 1.00 Lakhs	0.20 to 0.30 Ha
3	Polyclinic	Some observation bed	1.00 Lakhs	0.20 to 0.30 Ha
4	Intermediate Hospital	200 Initially the provision may be for 100 beds including maternity beds	1.00 Lakhs	Total Area = 3.7 Ha. i) Area for hospital = 2.70 Ha. ii) Area for Residential Accommodation = 1.00 Ha.
5	Family Welfare Centre	As per requirement	50,000	Total Area = 500 Sq.m to 800 Sq.m
6	Diagnostic Centre	As per requirement	50,000	Total Area = 500 Sq.m to 800 Sq.m
7	Rehabilitation Centre	-	-	As per requirement

This plan suggest to take appropriate measures by the health department for the provision of 7 nos. of dispensaries at various location within the master plan area covering an area of 0.08 – 0.12 hectare per dispensary serving at least 15,000 person's.

6.2.5 Parks and Recreation Spaces

Chapakhowa master plan area has only 90.06 hectare of land is used for recreational facilities. There is one outdoor stadium at Chapakhowa and there are other fields and open spaces in the town as well as in adjoining areas serve as playing field and recreational activities. There is one park and one community halls within the town area.



RUKMINI UDAYAN

LACHIT STADIUM

CHAPTER - 7

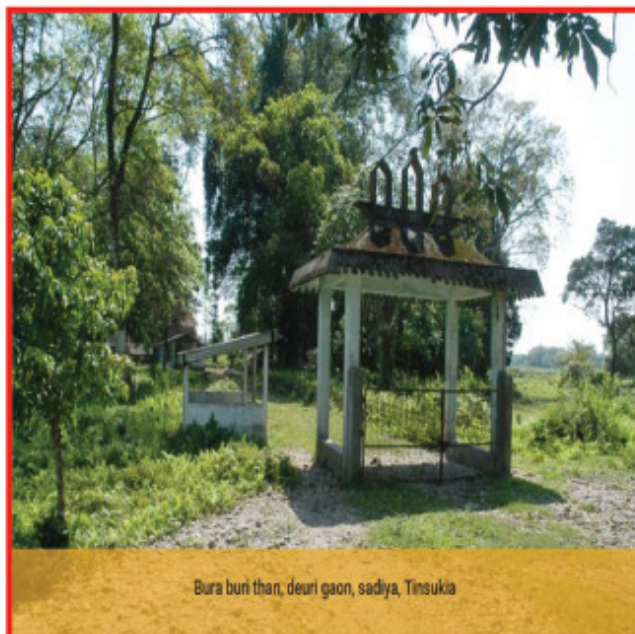
7. ENVIRONMENT, TOURISM AND CITY BEAUTIFICATION PLAN

7.1 Description of eco-friendly areas –

The Kundil River is an important tributary of river Brahmaputra, flowing through the alluvial plains of Chapakhowa in the eastern side of town & Jiyariver passes from Chapakhowa town.

The Bura-Buri Than is another important temple built by the Chutia kings. It was dedicated to Primordial parents Gira-Girasi or Bura Buri, which were later sanskritised

as Shiva and Sakti. Although the structure has fallen due to natural calamities, the base still remains intact upon which a new temple has been built. The temple was built using granite stone and fixed using iron dowels and brackets.



Bura buri than, deuri gaon, sadiya, Tinsukia

7.1.1 Tourism

Tourism is a social and economic phenomenon that heavily influences contemporary society (Crick, 1996). Nowadays, tourism industry can be considered as business behaviour since it might influence the development of a local economic. The secret for a successful destination is to approach the right target market and to provide an appropriate combination of local tourism products and services. Tourism is now-a-days considered as an important industry which has vast scope for the generation of income and employment. It is one of the world's fastest growing industries, a major source of foreign exchange earner of a nation and a measure for resolving interstate and inter community conflict.

The town of Chapakhowa is quite a colorful, vibrant but tiny location situated in the north-eastern corner of Assam adjacent to the border of Arunachal Pradesh.

Chapakhowa town near the Majgaon Ghat of River Kundil could be developed for tourism as large stretch of permanent water body covering an area of 30-40 bighas has of late become the nesting and roosting ground of a variety of bird species and home to large animals. Apart



from common avifauna, endangered white-winged wood duck, turtle and fox have been sighted. The site being close to Arunachal Pradesh and unexplored, presence of new species cannot be ruled out in the wetland.

7.2 Plan/Measures for protection and conservation of environmentally- friendly zones.

Being environmental friendly simply means having a lifestyle that is better for the environment. It's all about taking small steps towards mother earth so as to make this planet a better place for our communities and generations to come. A good way would be to start with conserving water, driving less, walking more, consuming less energy, buying recycled products, eating locally grown vegetables, joining environmental groups to combat air pollution, producing less waste, planting more trees and many more. The more that we do on our part the faster we will create an environment of living that promotes sustainability.

In the environmentally friendly zone, there is more than just a good recycling programmed in place. People of the town who are committed to conservation and preservation of resources should encourage options like community play grounds, public transportation, green construction and work to change the way that

fossil fuels and other resources are used to support community services.

This plan suggest following proposals for protection and conservation of environmental friendly zones-

- (i) People of Chapakhowa town should join hand with environmental groups to protect the town and make the environment clean and green.
- (ii) Reduce, reuse, recycle waste hierarchy is the order of priority of actions to be taken to reduce the amount of waste generated and to improve overall was temangement processes and programs.
- (iii) Plantation habit should be grown up among the people. For this necessary awareness camp should be organized by competent authority for conservation of natural resources and composting system.
- (iv) Steps should be taken by the authority to stop people from littering on roads. Instead, educate them to put trash and garbage in dustbins. The pile of garbage on road hampers the beauty of the city and also pollutes the air

7.3 City Beautification Plan/ Proposals-

To improve town's appearance and esthetic view, neighborhoods often try to update what is known as streetscape, which pertains to the area between the driving lanes and the edge of the private property. Partly this is a popular strategy because it is public space and it's easy for the government to dictate what will happen there. In truth, streetscape can be quite effective in uniting block faces or a series of blocks that are discordant in some way, because streetscape often includes plantings, the effect is to soften the view created by streets and hopefully sidewalks. Care in the choice of materials and in the quality of the installation makes all the difference in this form of beautification.

In addition to streetscape, sometimes we need a focal point. This might be public art and open air theatre, fountains, a clock tower or grouping of tall grasses. If we already have a lonely statue or old historical building with nothing around it, maybe we should add planting beds of considerable size, an inviting bench or two, and may be an interpretive sign explaining the rest of the store". A tree planting project, either on a vacant plot, in a park, or in the parkway between the sidewalks and the street is great for improving town's appearance over the course of a few years at a relatively low cost. Voluntary

schemes should be taken up by neighborhood basis for cleaning up the park of the town. Project should also be taken up for cleaning the river or stream. Letter collects on the banks and then ultimately in the water, especially when no trash cans are provide.

7.4 Roadside Plantation-

The main object of road side plantation is to provide protection to road, traffic, check soil erosion, food, fuel, fodder and timber to the society and mitigate climate change issues. Plantation is durable assets that produce fruits and raw-materials for agro based industry, and also generate livelihood after 7 to 10 years.

This plan suggest the social forestry department to prepare project on road side plantation with details of road to be covered , length of road and species of plants to be planned with numbers of plants for entire Chapakhowa master plan area.

Plantation of fruit bearing plants, suitable to local agro-climatic condition should be done in every area of the master plan. The authority concern should take steps for organizing camp and awareness program for road side plantation and educate the people about the benefits of road side plantation including its impact on city's landscape.

7.5 Urban Agriculture and Urban forestry.

Urban Agriculture is the new culture that is catching up in emerging cities. Since the population growth rate is very high, natural resource to feed the increasing population in coming days is going to be a difficult task. As such, urban agriculture is seen as a big solution to the problem.

Urban forestry is the careful care and management of tree in urban settings for the purpose of improving the urban environment. Urban forestry advocates the role of trees as a critical part of the urban infrastructure. Urban forest function is thus often oriented toward human outcomes, such as shade, beauty and privacy. Urban forests bring many environmental and economic benefits to town. Among these are energy benefits in the form of reduced air conditioning, reduced heating by shading buildings, homes and roads, absorbing sunlight, reducing ultraviolet light, cooling the air and reducing wind speed.

So, urban forestry scheme should be taken by competent authority for afforesting degraded forest land in the Chapakhowa master plan area. This type of scheme will act against climate change

by creating a carbon sink and against air pollution in the town. This plan also suggests for starting tree surveys in the town which can be conducted by NGO and college or school students. A plan should be framed to create small nurseries in Govt. school as well as in private institution where there is extra space.

7.6 Public Rain Water Harvesting Scheme

Rainwater harvesting is a process involving collection and storage of rain water that runs off natural or man-made catchment areas, e.g. roof top, compounds, rock surface or hill slopes or artificial repaired impervious/semi-pervious land surface.

Due to deforestation and the consequent ecological imbalance, the ground water level is going down day by day. The constant rising demand of water supply especially from the urban areas does not match with the surface water sources, as a result of which the water reserves beneath the ground level are over exploited. This consequently results in the water level depletion.

Water harvesting apart from recharging the ground water level, increases the availability of water at a given place at a given point of time. It also reduces the power consumption. It further reduces the run off which chokes the storm water drains, artificial flooding, chances of soil erosion and improves the quality of water. The plan suggest rain water harvesting scheme to be implement by a competent authority. Moreover, the urbanization trend reduces the infiltration rate of rain water into the sub-soil there by reduces ground water recharging.

7.6.1 Development of Parks and Recreation Spaces-

The Plan recommends 136.12 hectare of land for recreational purposes. The plan envisages a cultural need of the town and also recommends modernizing the existing play ground with adequate infrastructure. The plan also proposes an indoor stadium and one park.

URDPFI Guideline for Parks and Recreation Spaces:-

The provision of socio- cultural facilities shall correspond to the changing urban demography and work life style.

TABLE NO:-30**Norms for Socio- Cultural Facilities**

Sl.No	Category	Pop. Served per unit	Land Area Requirement (Sq.m)
1	Aganwadi- Housing area / Cluster	5000	200-300
2	Community Room	5000	750
3	Community hall / Marriage hall/ Library	15000	2000
4	Music, dance and drama centre	1 Lakh	1000

TABLE NO:-31**Norms for Recreational Facilities**

Sl.No	Category	Population Served per unit	Area Requirement (Ha)
1	Housing Area Park	5000	0.50
2	Neighborhood Park	15000	1.00
3	Community Park	1 Lakh	5.00

TABLE NO:-32**Norms for Sports Facilities**

Sl.No.	Category	Population Served per unit	Area Requirement (Sq. M)
1	Residential unit play Area	5000	5000
2	Neighborhood Play Area	15000	1.5
3	Town sports centre	1 Lakh	8.00

7.7 Beautification of Major Transit Zone

Chapakhowa can be emerged as a major transit zone and commercial hub at Chapakhowa town and Santipur outskirts of Chapakhowa town. So, it is very much essential to beautify and upgrade the major traffic points like bus stand, market area of this emerging transit zone to the region and Arunachal Pradesh.

7.8 Road Signage and Street Furniture

Road signs are signs erected at the side of or above roads to give instruction or provide information to road users. The earliest signs were simple wooden or some milestones. But in course of time, many states of India have been adopting pictorial signs or otherwise simplified and standardized their signs to overcome language barriers and enhance traffic safety, such pictorial signs use symbols in place of words.

Street furniture is a collective term for objects and pieces of equipment installed on streets and roads for various purposes. It included Benches, traffic barriers, bollards post boxes phone boxes, street lamps, traffic lights, traffic signs, bus stops, taxi stand, public lavatories fountains, public sculptures and waste receptacles an important consideration in the design of street furniture is how it affects road safety.

In Chapakhowa master plan area existing road signs and furniture are inadequate for increasing traffic and those are not also scientifically designed.

So, the plan suggests to authority concern to take steps for the installation of warning, priority, prohibitory, mandatory, information, facilities, service, direction, position and indication signs in the roads of Chapakhowa town, so that local people as well as outsiders can be benefitted and road safety can be maintained.

In Chapakhowa master plan area presently there is no street furniture necessary for the public. The concerned authority should take steps for the construction of public lavatories at important public places and installation of benches in the park and public places, post boxes, bus stop, taxi stand, waste collectors etc.

This plan recommends for preparation and execution of a city beautification plan covering street light, traffic signal etc. that will enhance the beauty of this resourceful town.

7.9 Rivers and Urbanization

Historically settlements have grown along the rivers. Most of the towns in India were developed around rivers because they played a

major role in sustaining the town itself. River provides water, support natural processes – like flood prevention and also provide rich biodiversity which are vital lung spaces for the town. These are extremely vital to the towns as plants for example: have a cooling effect, helping to lower surface and air temperatures by providing shade and releasing moisture into the air. They also manage floods as most of the plant species that grow on river banks absorb a lot of water, reducing flood energy which is a threat to people and buildings. Rivers also help to connect communities create opportunities for recreation and bring people together.

7.9.1 River Centric Planning

The river Jiya and Kundil flows east of Chapakhowa master plan area. There is a need for new thinking for ‘River towns’. There is need for the residential of these towns to ask “what can we do for the rivers?’ Hearing from experiences of Namami Brahmaputra, it is seriously felt that a new river centric thinking in planning for towns situated on the banks of rivers is the need of the hour. The river health needs to be mainstreamed into urban planning process by development of Urban River Management Plans. Towns should be responsible for rejuvenating their rivers. It has to be done not just with the regulatory mindset but also with development and facilitator outlook.

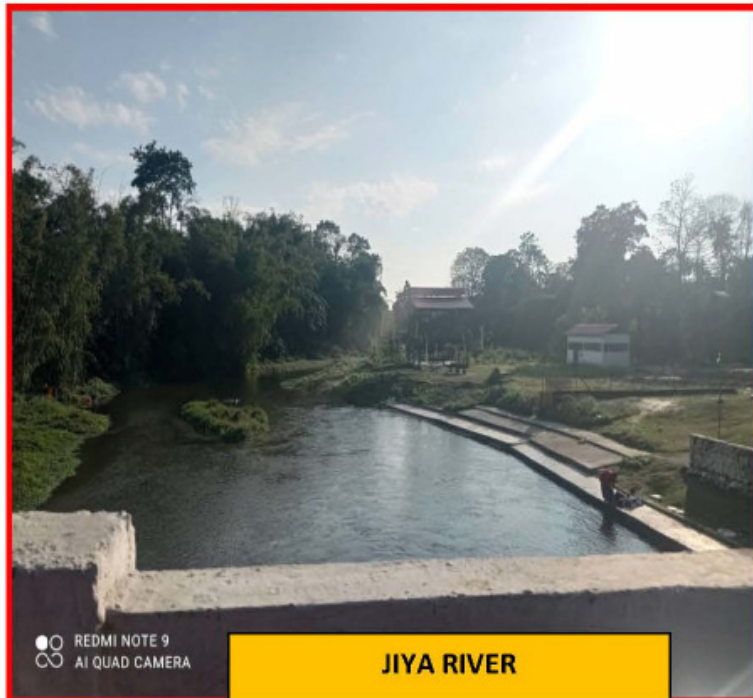
7.9.2 Abstract

Most of the towns in Assam are river centric and Chapakhowa is not exception of that, which signifies that the interactions between an urban center and its rivers are complex, reciprocal and collaborative. With urbanization and unplanned extraction of resources, it has been observed that the river’s morphology has been changed, thus plummeting its capacity to deliver ecosystem services, further adding excess runoff and diffuse pollution loads. On the other hand, river floods can damage the town in return. The floods had major short as well as long term impacts on the lives of people residing in the affected areas.

Nevertheless, there are potential aids in both directions. By good management and strict guidelines, a town with its residents can achieve increased land values, acceleration in economic efficiency, recreational aesthetic worth which can increase further environmental sustainability of the town with the development of the river system.

7.9.3 Introduction

The river Jiya passing through Chapakhowa town is a lifeline of the town. But due to unprecedented urbanization and household activities, Chapakhowa urban area have also witnessed construction activities including random and unauthorized



residential development which have may degraded the overall natural environment of flood plains of river Jiya.

In some places in the banks of river Kundil erosion is creating a major problem and its changes course frequently and therefore necessary steps to be taken for flood management.



Image: Northeast Now



KUNDIL RIVER PROTECTION WORK BY WATER RESOURCE DEPTT.

7.9.4 Need for Urban River Zone Conservation and mainstreaming it with Urban Planning.

Due to the pressure of urbanization and population growth in Chapakhowa, the river front areas of Jiya and Kundil river are getting degraded in terms of effecting water quality, limited access etc. and are often found functioning as open sewers or dumping ground.

Waterfront's have a long history of changing types and levels of uses and are now coming back into potentially thriving and layered public use. As such, the Govt. has taken initiative for river front development to improve the overall riverine environment. Waterfronts can be developed with different functioning and activities like parklands, recreational public place and as a retail or tourist centre. Studies also suggest that mixed use development along the waterfront is ideally suitable and beneficial; both for the community and town authorities as it not only provides wide public access to the riverfront but also contribute in the economic development of the town. As such, this plan suggest for the development of riverfront of the river Jiya by the concerned authority, so that the people of Chapakhowa can able to consume the fruit of river Jiya.

7.9.5 Objectives and Purposes of River Centric Planning

Broad objectives of River Centric Planning and Urban River Management are :-

1. To highlight the need for River Centric Planning and Urban River Management Plans for the guidance of town authority.
2. To attempt a framework for river water conservation and development of river waterfronts.
3. To recommend suitable planning strategies for river water management and river front development as a part of sustainable urban planning and development to transform the riverfront as a place where people can live, work and utilize and give them back the same riverfront through improvements in public access and addition of green spaces along river banks bringing out a multi-purpose riverfront.
4. To recommend development regulations / zoning for river front developments.

Sustainable urban planning and development has to take into consideration that river Jiya & Kundil at Chapakhowa region requires prioritized attention to ensure that the river is clean, free of any untreated discharge of waste water, erosion free and the flood plains are not only protected from the construction activities but also becomes the hub of recreational activities without compromising the overall natural atmosphere of not only river but of air, sound and wildlife.

7.9.6 “River Zone” and its Regulating Intent

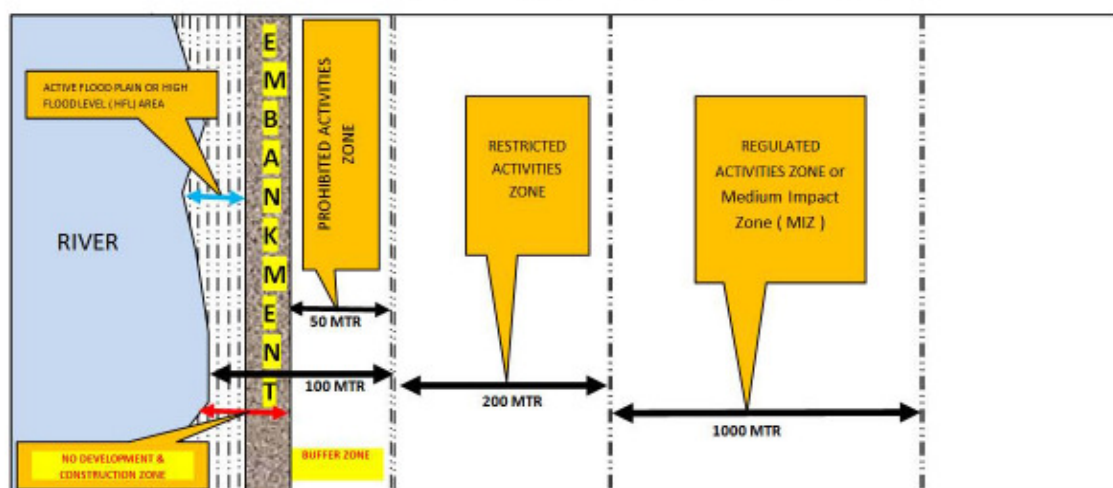
As per River Centric Master planning and Urban River Management and Planning guidelines of Ministry of Housing & Urban Affairs, Govt. of India : “The concept of flood plain zoning is to regulate land use in the flood plains to –

- (a) Restrict damage to land surface and built-up developments caused by floods.
- (b) Restrict environmental damages to the river and its abutting ecologically sensitive zones arising out of the land-use occupancies in such zones.”

This plan considers the following river regulation zones of Jiya & Kundil at Chapakhowa depending upon the permission granted to carry out developmental activities.

- 1. No development Zone and:** upto 50 meters from the High Flood Line (HFL) in past 50 years NDCZ (No Development and Construction Zone).
- 2. Prohibited Activities Zone:** upto 100 meters from the HFL in past 50 years (NDCZ). This zone is subjected to frequent flooding and most vulnerable with adverse impacts on human activities. In case the presence of embankments in the floodplain area, this zone will extend from the outer side embankment upto 50 m further.
- 3. Restricted Activities Zone :** This zone includes the floodplain areas which are less frequently affected by floods and lie further from the river. Its limit extends from the outer limits of prohibited zone upto 200 m further. Few restricted developments are recommended in alignment with activity recommendations as per zoning regulations.
- 4. Regulated Activities Zone:** From outer limit of restricted zone to 1000 m MIZ (Medium Impact Zone). Certain activities will be permitted in this zone.

Figure : 23(River Zone of Kundil river)



No Development & Construction Zone (NDCZ)	NDCZ will be covered Active Flood Plain or HFL along with embankment.
No Development & Construction Zone (NDCZ) & Prohibited Activities Zone	From outer limit of river bank the NDCZ and Prohibited Activities Zone will be 100 mtr. If know such embankment along the river bank.
Prohibited Activities Zone (PAZ)	50 mtr buffer zone from existing embankment will be comes under Prohibited Activities Zone (PAZ) and the presence of ecologically sensitive and fragile watersheds, heritage sites, endangered species, national parks, biosphere reserves, wildlife sanctuaries etc. included under NDCZ and PAZ.
Restricted Activities Zone (RAZ)	<ul style="list-style-type: none"> ➤ From outer limit of PAZ to 200 mtr. ➤ Area comes under restricted development as per zoning regulation. ➤ Construction of single story building, parks, playground etc. will be permitted after due approval from Water Resource & Pollution Control Board.
Regulated Activities Zone or Medium Impact Zone (MIZ)	<ul style="list-style-type: none"> ➤ From outer limit of MIZ to 1000 mtr. ➤ State Pollution Control Board (SPCB) are required to act as the competent Authority for the implementation of regulations for environmental conservation and preservation, including water bodies, forests and drains, parks, playgrounds, burial and crematoria. ➤ Activities permitted :- traditional grazing, capture fishing, organic farming, discharge of treated domestic waster waters, withdrawal of ground water using hand pump, recreational activities etc. ➤ Activities not permitted :- bundling , dumping of solid waste, construction of new embankment, land reclamation, storage of inflammable and toxic materials, and withdrawing water for commercial purpose other than hydro power and irrigation projects are prohibited.

7.9.7 Approach to River Zone planning through Master / Zonal Development Plans

The following points to be considered by the competent authority while planning developments in River Zones:

- i. Proposed development should reduce pollution within the zone and regenerate a healthy environment.
- ii. Any kind of development is to be safe from flooding even at peak flow level.
- iii. The resource requirement be partially mobilized by compatible development of land in the zones without compromising on quality of the environment.

- iv. Identifying the stretches to be developed on priority for being prone to encroachments and do not require large financial resources.
- v. To mitigate the constraints of land for public and semi-public uses in the adjoin areas / zones.

7.10 Tourism Issues

Chapakhowa town and its suburbs have immense potential and scope for the tourism industry. Chapakhowa is best known for her unique natural beauty with flora and fauna& cultural festivals. The various places of visit can be nature related, religious, historical etc. Some of the problems of tourism in Chapakhowa includes :

1. Poor Road Connection: The roads are in poor shape in many of the tourist spots. Some of the roads cannot be used during the rainy season. The pucca roads too are crying for attention.
2. Absence of Tourist Facilities: A tourist expects some basic facilities like well-maintained toilets and eateries.
3. Poor Maintenance: The tourist spots are neglected to say the least. Most of the infrastructure are in bad shape and needs urgent renovation. Caretakers are non-existent which affects the maintenance.
4. Lack of information: There is lack of information for the tourists regarding the tourist spots, their significance, and location. Guide facilities are also not there.

7.11 Tourism Potential

Capacity Building

- Selected villages should be given assistance for showcasing of handlooms and handicrafts to help the villagers sell their products.
- If necessary, we can have these exhibition centres for a group of villages also. These will help to sustain the crafts as these activities will help generate income for the villagers.
- Local youths can be trained to become tourist guides. They already have adequate knowledge about the places; they just need to be trained to enhance their soft skills so that they are in a better position to interact with the tourists.
- To develop a proper website, that enables to give enough information to domestic and foreign tourists.

Draft Proposal for Cultural hub cum park

- One cultural hub come park could be developed where the art of the different community people can be placed, and the place should be designed in such a way that it should be environmentally friendly.
- One side of the hub can be used to exhibit their traditional ornaments, dresses and food so that tourist can also enjoy their culture and tradition.
- The other side can be used for recreational which includes landscape and sculptures.
- The facilities like parking, drinking water and toilets should be provided inside the park.

CHAPTER -8**8. LAND USE PLAN****8.1 Developable and Non – Developable Area of the Master plan**

Urban growth and development in Chapakhowa often conditioned by the natural landscape like hills, water bodies, forests and manmade impediments. It is also conditioned by the resources and technology employed in overcoming the growth impediments and constraints.

Chapakhowa master plan area mainly covers by flat land. Except Jiya river and Kundil River there is no constraint for development. In this region Kundil River frequently change its course. In this region soil is very fertile and as such good vegetation like potato, ginger, mustard, rice observed and supplied to various region of Upper Assam & Arunachal Pradesh.

The quality of urban life and its functional efficiencies are governed by its land-use pattern. In order to understand and analyze systematically the functional relationship between various uses particularly the place of working, living and recreation, a detailed land use survey was conducted during 2021 - 2022 to estimate the present and future need of the urban and rural area of the master plan area. Chapakhowa master plan cover an area of 36.98 Sq.km out of which developed area 8.17 Sq.km i.e. 22.12% of the total plan area and non-developed area is 28.80 Sq.km i.e. 77.88% of the total plan area.

8.2 Existing Land Use

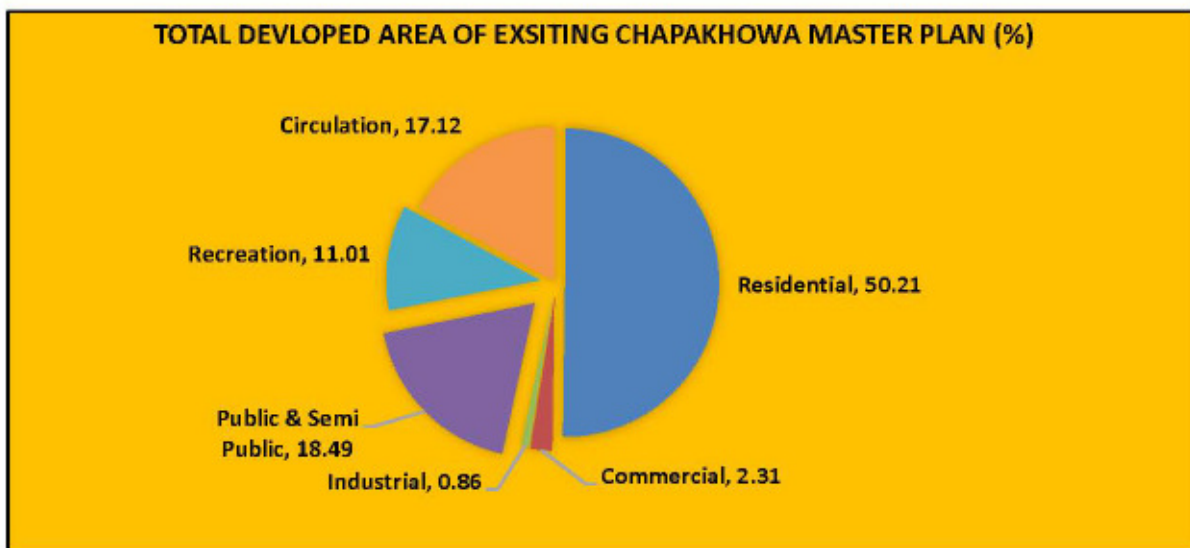
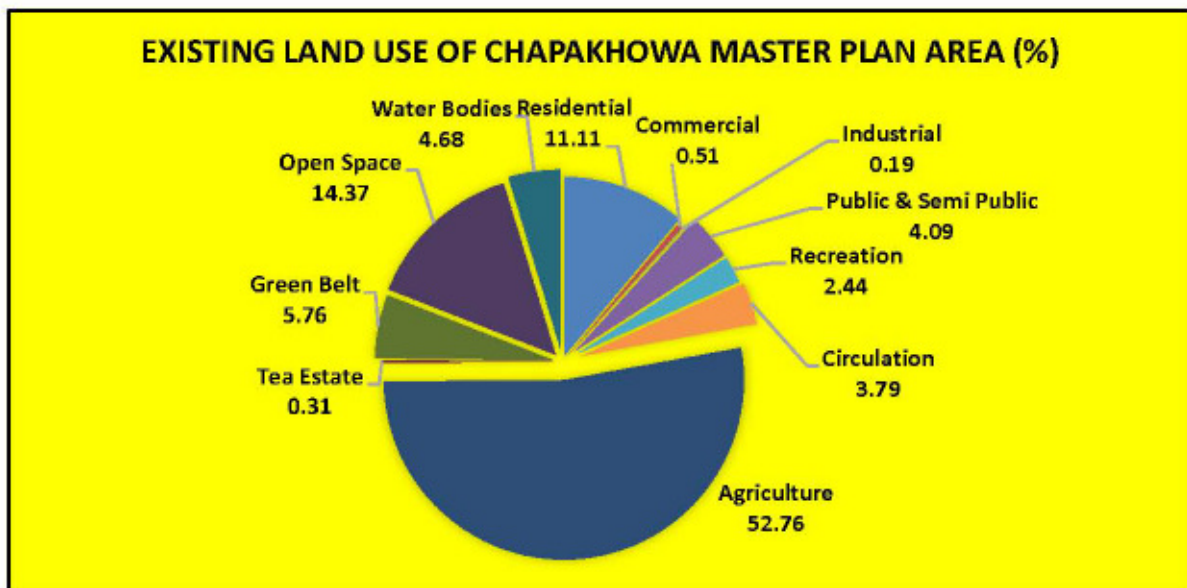
The existing various uses of land and the areas occupied by each use in Chapakhowa master plan is shown in the following table:-

TABLE NO: – 33**Existing Land Use – Chapakhowamaster Plan area in 2021 - 22.**

Use	Chapakhowa master plan Area in hectare	% of the Chapakhowa master plan Area (%)	Percentage of the total developed Area(%)
Residential	410.67	11.11	50.21
Commercial	18.86	0.51	2.31
Industrial	7.03	0.19	0.86
Public & Semi Public	151.22	4.09	18.49
Recreation	90.06	2.44	11.01
Circulation	140	3.79	17.12
(A) Total Developed Area	817.84	22.12	100
Agriculture	1951.09	52.76	--
Tea Estate	11.46	0.31	--
Green Belt	213	5.76	--
Open Space	531.54	14.37	--
Water Bodies	173.07	4.68	--
(B) Total Undeveloped Area	2880.16	77.88	--
GRAND TOTAL (A+B)	3698	100	--

Source: - Town& Country Planning, Dibrugarh Land Use Survey 2021-22 .

FIGURE:-24
Existing Land Use & Total Developed area



Out of the total developed area of 817.84 hectare, about 410.67 hectares of land are used for residential purpose, which constitutes 50.21% of the total developed area. New residential areas have developed in the last few years at Santipur, Chapakhowa No 1 & 2.

Commercial and business uses occupy nearly 18.86 hectare or 2.31% of the total developed area. The central business area in Chapakhowa is located at in a compact manner along NH-115 road starting from the Govt. High School. There are two main markets at Chapakhowa: one is the Chapakhowa Daily Market in the town & the other is Santipur market near the north master plan boundary. The

parking spaces and open areas are inadequate to accommodate the increased business activities and vehicular traffics.

Industrial uses occupy an area of 7.03 hectare or 0.86 % of developed area. The light industrial activity is scattered at Chapakhowa town. The pavers block industry situated at Marwadipatty, Lachit Nagar with in the town and in Borjhiya village. The industrial activities in the master plan area is less compare to other nearby towns. As such this plan suggest for an industrial estate within the master plan area.

The land covered under Public and semi-public uses including educational institutions & Govt. Offices is about 151.22 hectare, which is 18.49% of the total developed area. After declaration of Sadiya as a Sub-division in the year 1989, various Govt. Offices has been set up in Chapakhowa and accordingly number of educational institutions has also been increased.

In Chapakhowa 90.06 hectare of land or 11.01% of the total developed area is used for recreational purposes. There are two main fields in Chapakhowa for outdoor games besides a number of small fields & open spaces scattered all over the master plan area.

Transportation and Circulation network of a town plays an important role and affects immensely the economic and socio-cultural life of the town. A well-developed road network can provide answer to many problems of urban life. In Chapakhowa master plan Area, the land used for circulation purposes is 140.00 hectare, which constitutes 17.12% of the total developed area.

The plan suggest to provide railway linkage to Chapakhowa town from other parts of the state for better connectivity and development of northern part of the people of Sadiya (Chapakhowa) and parts of Arunachal Pradesh.

In Chapakhowa master plan Green belt covers an area of 213 hectare, i.e. 5.76 % of the total master plan area. Tea garden covers an area of 11.46 hectare, i.e. 0.31 % of the total master plan area. The land use for Agriculture is 1951.09 hectare or 52.76% of the total master plan area. Open spaces constitute an area of about 531.54 hectare or 14.37% of the total plan area. Water bodies constitute an area of 173.07 hectare, i.e. 4.68% of the total plan area.

8.3 Proposed Land use:

Land use planning has a bearing on the expansion of the town and put pressure on rural areas. A change in urban economic function

changes its population growth. The decision to set up administrative block, commercial activities and industrial estates as well as any Govt. policy to stimulate the urban economy accounts for population growth resulting in to opportunities for employment, increased income and business opportunities.

The proposed Chapakhowa master plan covers an area of 3698.00 hectare or 36.98 sq.km., out of which about 1352.38 hectare or 36.57% of the total plan area is proposed to be developed for urban use by 2041 for a projected population of 47117 persons.

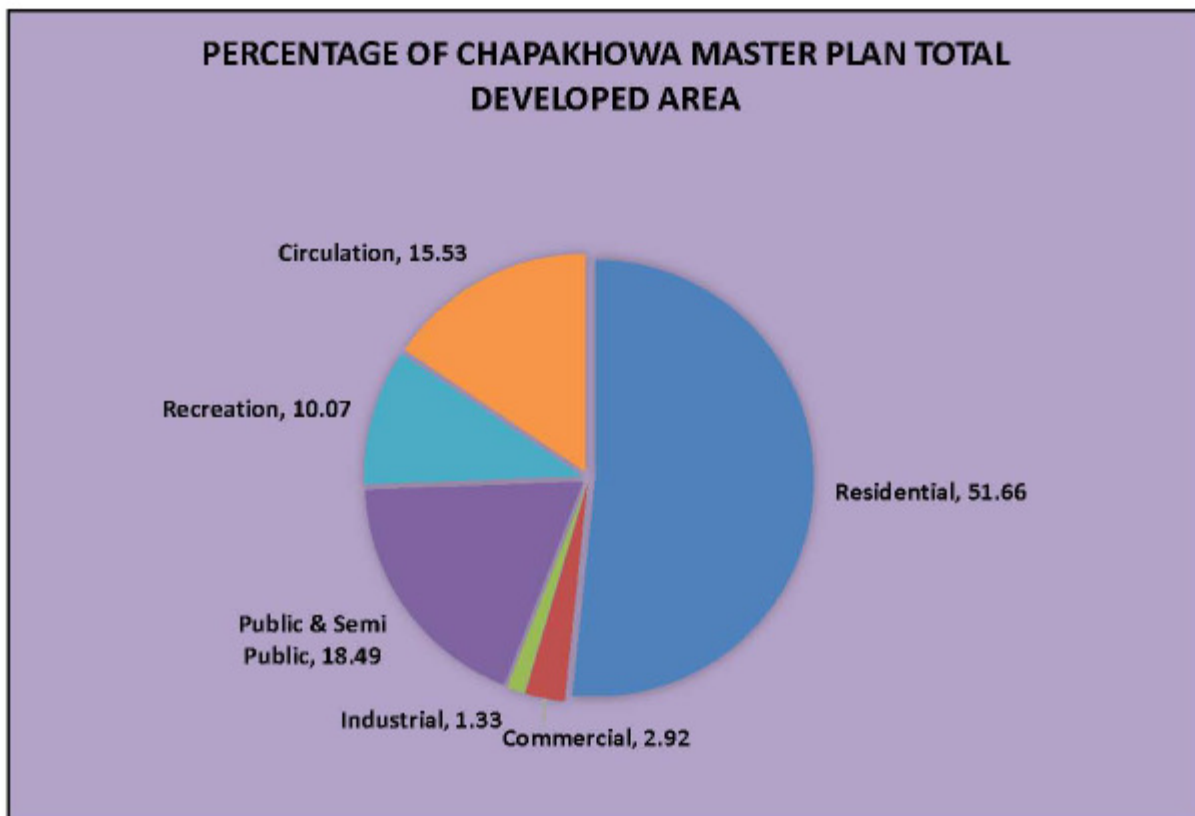
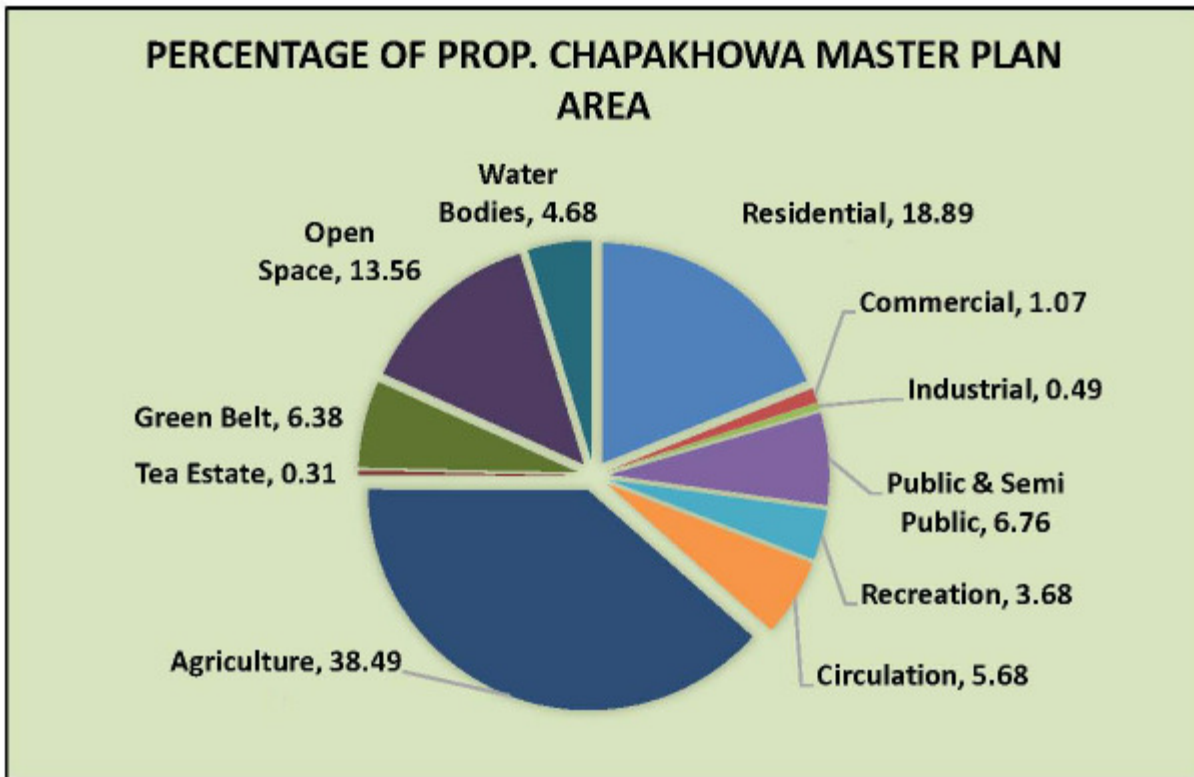
The following table shows the proposed distribution of land uses in Chapakhowa master plan area up to 2041.

TABLE NO:-34
Proposed Land Uses – Chapakhowa Master Plan Area
up to 2041.

Use	Chapakhowa Master plan Area in hectare	Percentage of the Chapakhowa Master plan Area (%)	Percentage of the total developed Area(%)
Residential	698.69	18.89	51.66
Commercial	39.51	1.06	2.92
Industrial	18.02	0.48	1.33
Public & Semi Public	250	6.76	18.48
Recreation	136.12	3.68	10.06
Circulation	210.04	5.68	15.53
(A) Total Developed Area	1352.38	36.57	--
Agriculture	1423.5	38.49	--
Tea Estate	11.46	0.30	--
Green Belt	236.05	6.38	--
Open Space	501.54	13.56	--
Water Bodies	173.07	4.68	--
(B) Total Undeveloped Area	2345.62	63.42	--
GRAND TOTAL (A+B)	3698	100	--

Note: Developed area is calculated by subtracting the area of agriculture, tea estate, green belt, open space& water bodies from the total Master plan area.

FIGURE :-25
Proposed Land Use & Total Developed Area in CMP



An area of about 698.69 hectare or 16.23% of the total master plan area has been earmarked for residential use. It is presumed that a part of the total projected population will be residing in the mixed used areas. In the proposed land use plan, the gross residential density will increase to 927 persons per Sq.km. The following gross residential density is recommended in the plan:-

1. Low density : up to 50 persons per hectare.
2. Medium density : 50 – 100persons per hectare.
3. High density : 100 –125 persons per hectare.

About 39.51 hectare of land or 2.92% of the total developed area has been allocated for commercial use in the plan at various suitable places.

The plan has allocated an area of 18.02 hectare or 1.33% of the total developed area for industrial activities

The plan also earmarked an area of 250.00 hectare or 14.48 % of the total developed area for Public & semi- public.

The plan also plan suggested an area of 136.12hectare or 10.06% of the total developed area for recreational activities.

An area of 210.04hectare or 15.53 % of the total developed area for circulation purpose.

CHAPTER- 9**9. PROPOSED PROJECT, BRIEF AND TENTATIVE FUNDING SOURCE****9.1 Identify Priority Sectors and Project**

The plan proposals for Chapakhowa master plan area spread up to 2041. Chapakhowa is a rural economy based growing town due to opening of Bhupen Hazarikasetu in the year 2017. It has a religious past in presence of many undiscovered historical sites may lead to a promising tourist town of the state if it is properly planned and design. The plan recommends to stop unplanned development and to encourage balance planned and sustainable development where the provision for necessary physical infrastructure and socio-economic amenities are economically made possible. There are some immediate necessities as pointed out by the various stake holders, which are to be taken up as priority schemes for the master plan area which is listed below:

1. Development of agriculture marketing board to encourage local traders for organic farming and to export their products.
2. Setting up of centralized training centre (agriculture based) for value addition to the local products.
3. Mapping of all tourist spots & heritage sites with sate of art facilities and encouraging local youths for tourist guide.
4. Encouraging private builders to set up resorts and naturopathy centre for rejuvenation.
5. Widening and improvement of roads& junction, with street lights and demarcation of notified parking area.
6. Improvement of existing Chapakhowa Daily Market.
7. Construction of a Tourist lodge
8. Development of Residential Land Development Scheme
9. Improvement of existing traffic signal points and setting up new ones.
10. Setting up of Organic farming industry.
11. Setting up of Micro Small and Medium Enterprises.(MSME)
12. Improvement of existing Auto & Bus stand at Chapakhowa town.
13. Construction of Vendor and Hawker market.
14. Construction of truck stand.
15. Construction of cold storage, ware house etc.
16. Development of playground and Construction of Indoor stadium.
17. System of regular collection and disposal of garbage in the master plan area by the concerned authority.
18. Scheme for Solid waste Management system as per Solid Waste Management Amendment Rule, 2020.
19. Preparation and execution of a comprehensive drainage scheme.
20. Water supply scheme
21. Ethnic & Cultural Centre with museum
22. Proposal for construction of Cultural hub cum park.
23. River front development at Kundil River and Jiya river.

In the first phase, the schemes like widening and improvement of roads, construction of new roads, provision for required spaces for parks and improvement of playgrounds and parking places and improvement of commercial and market areas including existing market, daily bazaar etc. can be taken up. The municipality has to play an important role visioning with other Govt. agencies in formulation and

execution of such schemes in the master plan area. All the above schemes need to be carried out to make the plan area in to healthy place of living.

In addition to the above, the plan also recommends for the establishment of Health center, improvement of junctions, and construction of Administrative block for all Govt. offices under one roof.

9.2 Fund Requirement for each Sector/ Project

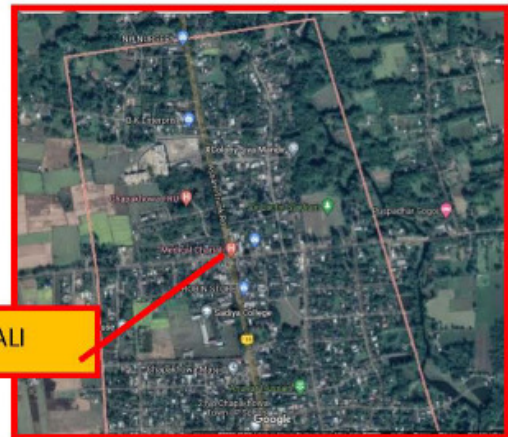
Fund requirement for each sector project will be finalized by the ULB& concerned line department after preparation of detailed project report as per Govt. instruction.

9.3 Identify Land Site for Proposal

The plan finds the following sites are suitable for taking up the proposals in accordance with the existing trends of growth as well as for balanced development.

1. Widening and improvement of roads and junction, with street lights and demarcation of notified parking area.

MEDICAL CHARIALI



2. Improvement of existing Chapakhowa Daily Market.



3. Multilevel parking and improvement of existing Auto-stand.



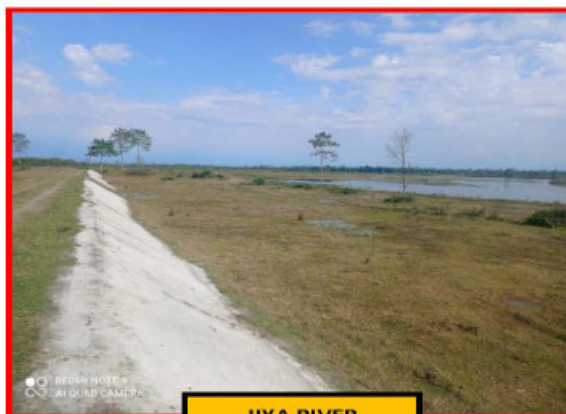
4. System of regular collection and disposal of garbage in the master plan area by the concerned authority and municipality.



5. Scheme for Solid Waste Management System as per Solid Waste Management Amendment Rule, 2020. Proposed at 2 No. Chapakhowa



6. Water supply scheme at Milan Nagar.



7. River Front Development at the bank of Kundil river and Jiya river.

JIYA RIVER

8. Improvement of existing traffic signal points and setting up new ones by concern authority.
9. Construction of Vendor and Hawker market by municipality.
10. Development of playground and Construction of Indoor stadium at Borjiya.
11. Preparation and execution of a comprehensive drainage scheme by Department of Housing & Urban Affairs.
12. Proposal for construction of Cultural hub cum park at town sheet No. 4 & 5.
13. Construction of a Tourist lodge at town sheet No. 8.
14. Development of Residential Land Development Scheme at town sheet No. 8.
15. Construction of old age home at town sheet No. 5.
16. Setting up of Organic farming industry.
17. Setting up of Micro Small and Medium Enterprises (MSME) at 2 No. Chapakhowa.
18. Construction of truck stand at town sheet No. 7.
19. Construction of cold storage, ware house etc. at town sheet No. 7.
20. Ethnic & Cultural Centre with museum at town sheet No. 8.

9.4 Indicative Sources of Fund

The ULB& concerned line departments will submit the DPR's to their respective departments for sanctioning fund from State & Central Government under various schemes like NLCPR, NEC, 10% pool, Jal Jeevan Mission fund etc. The ULB's can also adopt the policy of Private Public Partnership (PPP) mode for raising the fund for a few remunerative projects.

CHAPTER- 10

10 DISASTER PLAN

10.1 Hazards Specific Proneness in Chapakhowa:

➤ **Earthquake :-**

As per the latest seismic zoning map of India, the Chapakhowa master plan falls under High Risk Zone- V, where a maximum intensity of IX can be expected.

➤ **Flood :-**

Even Chapakhowa town is also facing urban flooding in many localities due to lack of proper drainage system.

➤ **Soil Erosion :-**

The soil erosion is major threat to many areas due to the high undercurrent of river Kundil.

➤ **Fires :-**

The fire takes places in Chapakhowa due to short circuit in commercial areas, thatched house. Mainly fire takes place from March to April when the climate remains very dry. The district also prone to industrial disaster due to the presence of coal fields in an around Chapakhowa.

➤ **Cyclone:-**

In Chapakhowa cases related to low density cyclone occurred in some places.

10.2 Need for Disaster Management

Data on disaster occurrence, its effect upon people and its cost to countries, are primary inputs to analyze the temporal and geographical trends in disaster impact. Disaster losses, provide the basis for identifying where, and to what extent, the potentially negative outcomes embedded in the concept of risk is realized. They help to understand where, and to whom, disaster risk becomes impact. They also provide the basis for risk assessment processes, a departing point for the application of disaster reduction measures.

Development cannot be sustainable unless disaster mitigation is built into development process. Investments in mitigation are more cost effective than expenditure on relief and rehabilitation. Prevention and mitigation contribute to lasting improvement in safety and are essential to the integrated disaster management system. Disaster response alone is not sufficient as it yields only temporary results at a very high cost. So, emphasis must be on Disaster prevention,

mitigation and preparedness, which help in achieving objectivity of vulnerability reduction.

As per Section 40 of Disaster Management Act, 2005 that every department of the State Government shall prepare a Disaster Management Plan.

10.3 Importance of Putting Disaster Management Plans in Place

Disasters are events that have a huge impact on humans and/or the environment. Disasters require Government intervention. They are not always unpredictable. Floods take place in valleys and flood plains, droughts in areas with unstable and low rainfall, and oil spills happen in shipping lanes. This predictability provides opportunities to plan for, prevent and to lessen the impact of disasters.

Disasters arise from both natural and human causes, and the responses needed could stretch community and government capacity to the limit. Disasters are inevitable although we do not always know when and where they will happen. But their worst effects can be partially or completely prevented by preparation, early warning, and swift, decisive responses.

Disaster management aims to reduce the occurrence of disasters and to reduce the impact of those that cannot be prevented. The Government White paper and Act on Disaster Management define the roles of Local Authorities as well as Provincial and National government in disaster management.

North East Region has been vulnerable to many natural and manmade disasters in the past. We can notice that most of the disasters have occurred within the last two decades, and the frequency, intensity and magnitude of the disasters are ever increasing.

10.4 Plan Objectives

The objectives of the Disaster Management Plan are:

- Disaster management in the routine affairs of the office
- To provide technical and humanitarian assistance during disaster
- Prompt and effective discharge of office responsibilities during disaster situations
- Ensuring safety of office infrastructure, human resource and other assets
- Ensuring safety of the beneficiaries and others
- Speedy restoration after disaster impact

- To conduct trainings and capacity building for effective prevention, mitigation and response for disasters.
- To undertake information, education and communication activities to create awareness among the communities and the general public.

10.5 Likely Geographical Extent and Magnitude / Severity

- 1) The Master plan area is situated on a flat land with slight slopes towards east - south upto the river Kundil coming from Arunachal Pradesh and after crossing the river the slopes towards south. The river Kundil flowing towards the east part. Hence, Chapakhowa town is severely prone to east side.
- 2) Assam as a whole is within the Zone V of earthquake zone. Chapakhowa has witnessed a devastating earthquake in 1950. So, it can be said that geographically and geologically Chapakhowa is situated in a very hazards prone zone.
- 3) Chances of erosion are comparatively higher in the CMPA as Kundil River changes its courses frequently due to that mainly erosion take place in many places. But fire can broke out in the congested residential and commercial areas, market of the town anytime during lean season. The CMPA has faced cyclones several times in the past. Road accident, collapse of RCC buildings etc. can occur at any time. Of course riot is not so common in this district.

10.6 Disaster Management Cycle

In multi-hazard response plan, the disaster management cycle has a significant role to play. The four stages of disaster cycle have their own importance in terms of their implementation during, after and before the occurrence of any disaster.

Pre disaster activities

1. Policy development and National, State, district, local level disaster organization formation
2. Vulnerability and capacity assessment.
3. Prevention and mitigation
4. Preparedness, planning and training



Pre disaster activities

1. Policy development and National, State, district, local level disaster organization formation
2. Vulnerability and capacity assessment.
3. Prevention and mitigation
4. Preparedness, planning and training

During Emergency activities

1. Warning (beginning before the actual event)
2. Evacuation, search and rescue
3. Emergency assistance (relief) – food, water, shelter, medical aid

Post disaster activities

1. Repair and restoration of life lines (power, telecommunications, water transportation)
2. Reconstruction and rehabilitation.

10.7 Formation of Chapakhowa Disaster Management Cell (CDMC)

So, the Master plan recommends for formation of a Chapakhowa Disaster Management Cell (CDMA) in the office of Chapakhowa municipality, as per Section 40 of Disaster Management Act, 2005.

The CDMC has to be constituted with the following functionaries are Chairperson (Chairman), Vice Chairman (Co-Chairperson), Chief Executive office (Executive Office), Members (SDOI, Health, Roads, Building, Industries (Coal) and other relevant department), Nodal Officer (Jr. Engineer).

The CDMC will give emphasis towards the preparation of Chapakhowa Disaster Management Plan. The plan also recommends that the CDMC cell to co-ordinate during emergency with the District Disaster Management Authority (DDMA) located at the Head-Quarter of the District. The CDMC will provide all the available resources and manpower for Disaster Management. This Cell will mobilize the service of technical personnel for the damage survey work to help the District Administration.

The CDMC must meet at least once in six months i.e. in the month of March and September before the Disaster Season (Flood & Cyclone) of Chapakhowa town under the chairmanship of the Chairman, Chapakhowa municipal board & to update the plan. For this one month's prior notice should be given to all concerned departments before convening the meeting. The Chairman should review the work

of CDMC. An emergency meeting will hold whenever information is received regarding calamity.

10.8 Standard Operation Procedure (SOP)

The Master plan recommends the CDMC for formulation of Standard Operation Procedure (SOP) for automatic response of the members during disaster.

- Written guideline that precisely defines how operations are to be carried out.
- An organizational directive that establishes a standard course of action.
- Written guidelines that explain what is expected and required of the personnel.
- Standardization of activities :-
- Identify planned and agreed upon roles & actions.
- Promotes coordination and communication amongst personnel.
- Simplify decision making during potentially stressful conditions.

Proper implementation of Assam Notified Urban Area Building Rules – 2014 (ANUABR) & Sensitization among stakeholders engaged for construction work / owners to use disaster resistant technologies.

10.9 Rainwater Harvesting

Chapakhowa Zone has experienced heavy rainfall during summer season due to the tropical monsoon in the region. So, the plan recommends adoption of rainwater harvesting system in construction activities that will reduce the volume of artificial floods in the Master plan Area and also help to maintain the ground water level.

10.10 Do's & Don'ts during

a) Earthquake



b) Fire

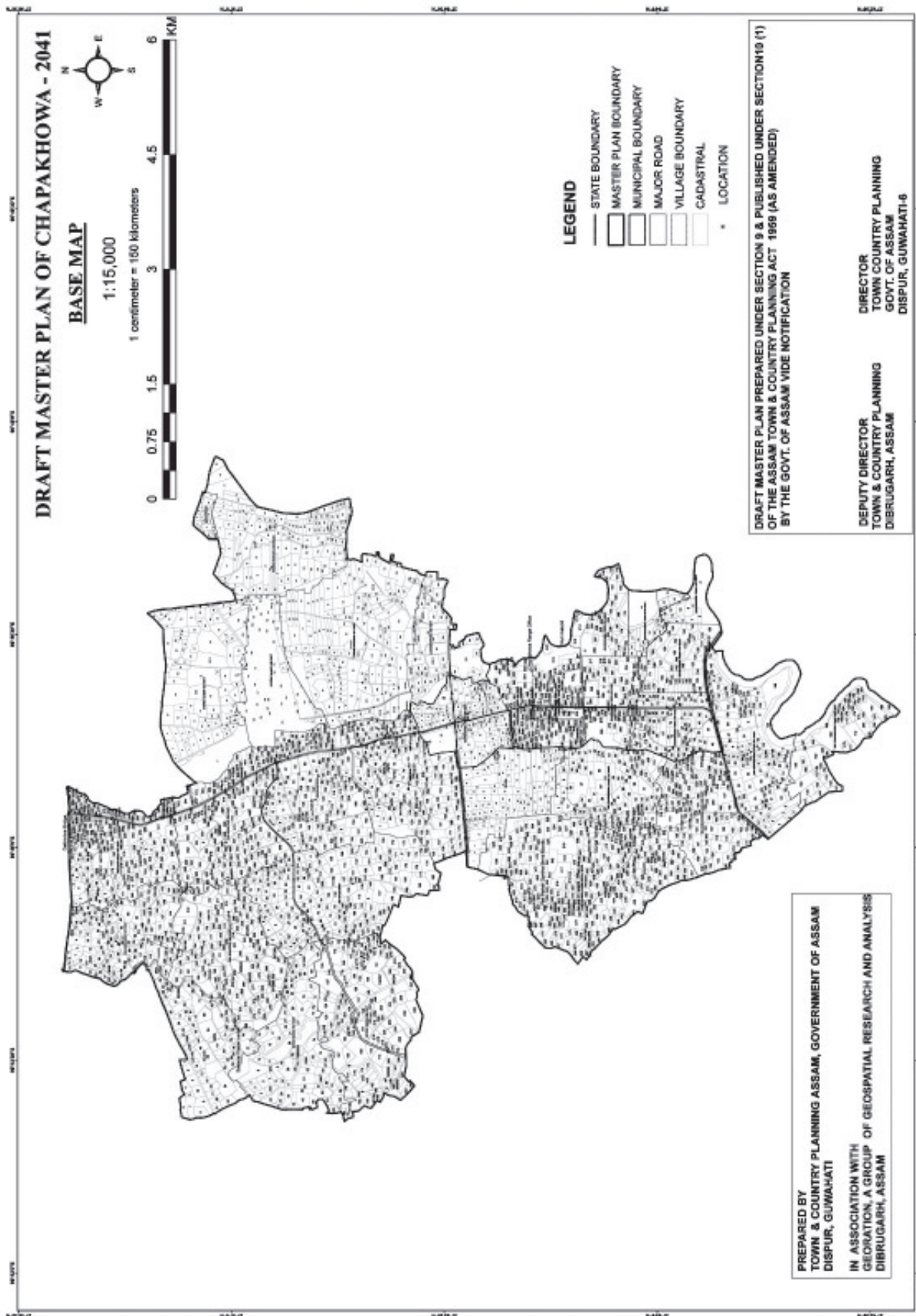


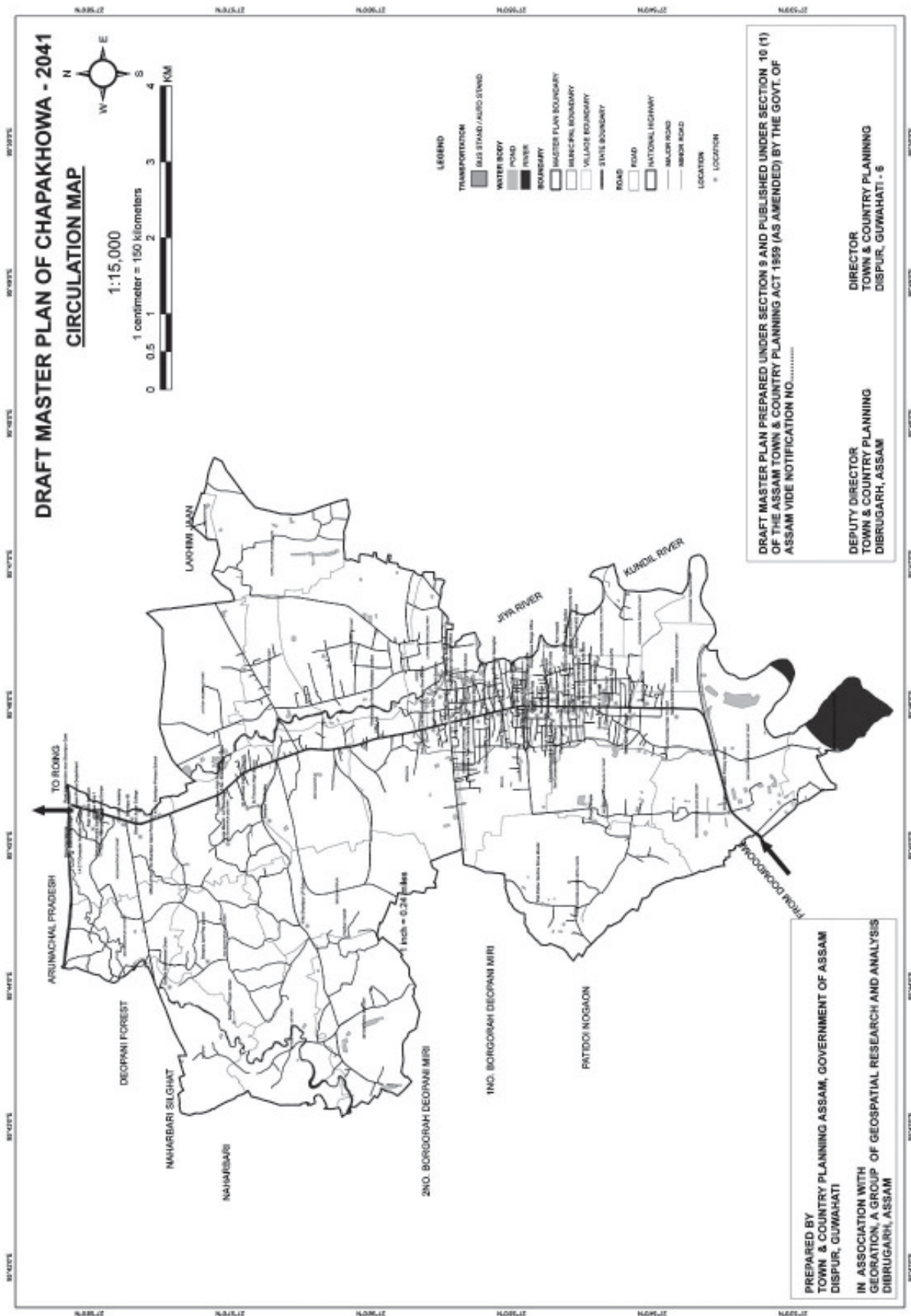
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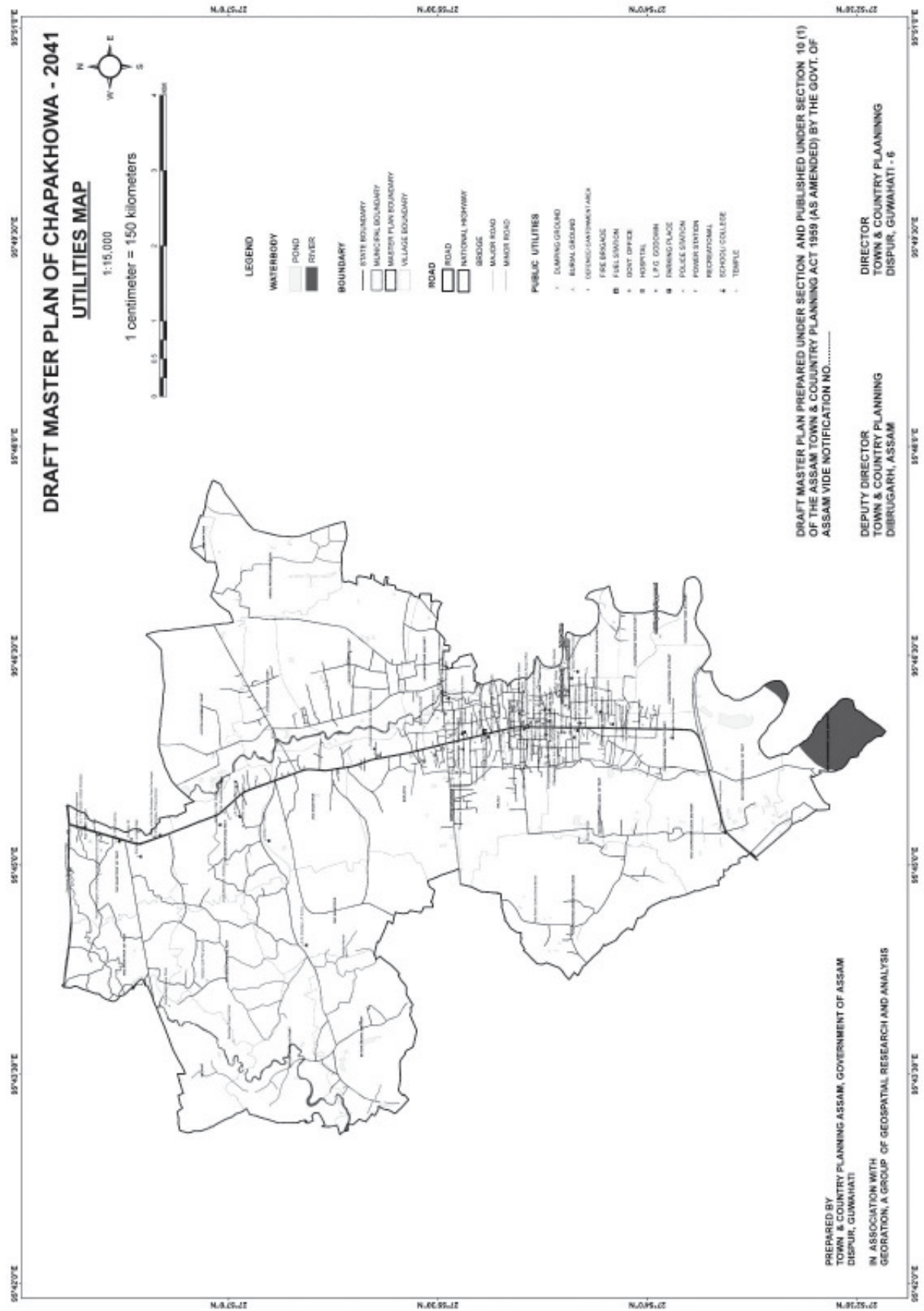
ANNEXURE-I**TABLE NO :- 35****Actionable points for various line departments**

Sl. No.	Name of line Department/Agency/	Proposal	Action to be under taken towards implementin g proposal
1	Chapakhowa Municipal Board	a) Solid Waste Management b) Construction of vendor & Hawker Market c) Construction of Tourist Lodge d) Truck/ Bus/ Auto Stand & Parking	Line department shall prepare concept paper / DPR whichever is applicable as per directive of the government for consideration of funding under 10% pool fund, NLCPR, NEC, State Finance Commission, CSR Fund & Pvt. Sector etc. in a phased manner but during the Master plan period i.e. up to 2041. A few selected schemes like housing colony can be consider under PPP mode.
2	Public Works Department & Chapakhowa Municipal Board	a) Footpath & cycle Track b) Road signage in roads and in accident prone area c) Road Signage & Street Furniture d) Drainage	
3	ASEB & Chapakhowa Municipal Board	Improvement of street lighting	
4	Public Administration and Chapakhowa Municipal Board/ Sports Deptt.	Playground and Construction of Indoor stadium, Cultural hub cum park.	
5	Public Works Department	Widening of Road	
6	Chapakhowa Municipal Board and Town & Country Planning Assam	Development of Drainage system	
7	Chapakhowa Municipal Board and Public Health Engg. Department	Improvement of sanitation	

8	PHE Department & Assam Urban Water Supply and Sewerage Board	Water Supply Scheme	Line department shall prepare concept paper / DPR whichever is applicable as per directive of the government for consideration of funding under 10% pool fund, NLCPR, NEC, State Finance Commission, CSR Fund & Pvt. Sector etc. in a phased manner but during the Master plan period i.e. up to 2041. A few selected schemes like housing colony can be consider under PPP mode.
9	Education Department, NGO and Private Agency	Education Facilities	
10	Health Department, NGO and Private Agency	Health Care Facilities	
11	Sports & Youth Welfare Department & Sports Association	Development of playground and construction of stadium	
12	Social Forestry, Chapakhowa Municipal Board, Public Administration and NGO/ Private Builders/ Tourism	Protection & Conservation of environmentally friendly zone/ Tourism Spots/ heritage site	
13	Social Forestry Department	Roadside Plantation& Urban a forestation	
14	Agriculture	Urban Agriculture & Organic farming/ ware house/ cold storage	
15	Water Resource Department& Pollution Control Board	River front development& River Centric Planning	
16	Transport Department	Transit Zone	
17	Tourism Department and NGO	Development of tourist spot and cultural hub cum park.	
18	DICC	Micro Small and Medium Enterprises	



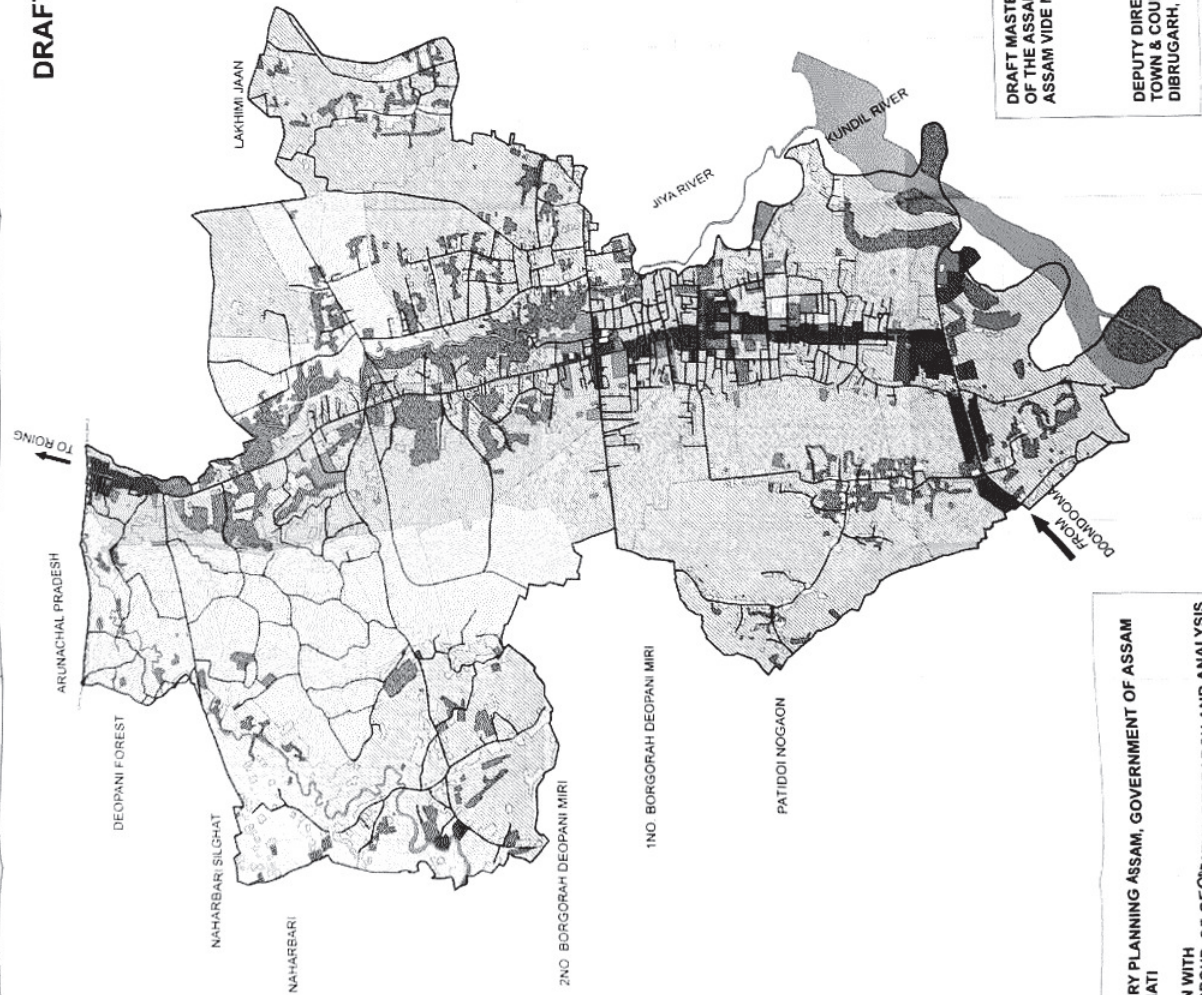
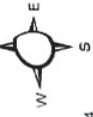




DRAFT MASTER PLAN OF CHAPAKHOWA - 2041 PROPOSED ZONING PLAN

1:15,000

1 centimeter = 150 kilometers



Legends :

ROADS

- Minor Road
- Major Road
- National Highway

BOUNDARIES

- Village Boundary
- State Boundary

PROPOSED ZONING

- HIGH DENSITY RESIDENTIAL
- MED-IUM DENSITY RESIDENTIAL
- LOW DENSITY RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- PUBLIC & SEMI PUBLIC
- GREEN BELT
- AGRICULTURAL LAND
- RIVER/RAIN
- WATER BODY (POND/DRAIN/LAKE)

EXISTING LAND USE

- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- PUBLIC & SEMI PUBLIC
- RECREATIONAL SPACE
- TRANSPORTATION
- PLANTATION
- TREE CLAD AREAS
- AGRICULTURAL LAND
- OPEN SPACE
- LAND FILL SITE
- RIVER/DRAIN/WATER BODY

64MP AERIAL CAMERA
Shot on Reelme 6

DRAFT MASTER PLAN PREPARED UNDER SECTION 9 AND PUBLISHED UNDER SECTION 10 OF THE ASSAM TOWN & COUNTRY PLANNING ACT 1959 (AS AMENDED) BY THE GOVERNMENT OF ASSAM VIDE NOTIFICATION NO.....

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