Report Of Spatial Planning In Gram Panchayats
Ministry Of Panchayati Raj,

Govt. Of India

Ministry of Panchayati Raj

By School of Architecture and Planning
KIIT University , Bhubaneswar

Acknowledgement

School of Planning and Architecture , KIIT University is immensely grateful to Ministry of Panchayati Raj (MoPR), Government of India for its sustained support to the research. We thank Shri Sunil Kumar,IAS, Hon'ble Secretary, MoPR and Mr. K. S. Sethi, IAS, Joint Secretary, MoPR for reposing confidence in us by entrusting us with such a prestigious project. We appreciate the support provided from time to time by Shri D K Singh, Principal Secretary, Panchayati Raj and Drinking water Department, and Smt. Swayamprava Mohanty , Joint Secretary, Government of Odisha and thank them for their cooperation and sharing necessary information with us.

We owe a lot to National Informatics Centre (NIC) and National Remote Sensing Centre (NRSC) especially Dr Y K Srivastava , Sr Scientist ,NRSCfor always being there for us during the mobile survey and providing the relevant maps.

We are deeply indebted to Sarpanch of Nuapatna for making herself available whenever we had visited or called her and providing all the necessary information. She also contributed a lot in facilitating stakeholder discussions in the village. We thank the all the Gram Panchayat officials for sharing their vision with us .

We are thankful to our Hon'ble Founder of KIIT University ,Dr Achyuta Samanta , Member of Parliament for supporting us in this endeavour.

Last but not the least, we are thankful to all our project associates for their continuous support in household surveys, mapping, and data compilation throughout the Project period.

TABLE OF CONTENTS Page

LIST OF FIGURES

LIST OF TABLES

Executive Summary

After the introduction of Census Town in 2001 by the Census of India, urbanisation has spread to rural areas as well, especially in terms of land use conversion of rural areas from that of agriculture to non-agricultural areas. This necessitated land use plans for the rural areas of India.

The earlier 73rd Constitutional Amendment Act though brought in the XI Schedule for planning of all aspects such as social, agriculture, environment etc, but short of Land Use Plan in rural areas. The efforts brought in by the Ministry of Panchayati Raj, in 2020 to attempt to develop land use plan for the rural areas of India integrated into the Gram Panchayat Development Plan is towards the organised land use plan for the rural areas on line of urban areas.

In 2016, Ministry of Panchayat Raj (MoPR) came out with a Rural Area Development and Plan Formulation and Implementation (RADPFI) Guidelines. Mainly focussed on peri-urban areas, the RADPFI came out with details of land use plan. However, it was short of linking to GPDP in terms of land use plan. The Svamitva programme of digitalisation of villages, the RURBAN MISSION are programmes that are all moving towards developing rural areas of India.

School of Architecture and Planning, KIIT University selected Nuapatna GP ,Cuttack district of Odisha State, in consultation with Panchayati Raj and Drinking water Department, Odisha. Here, we present the detailed Spatial Village Development Plan for Nuapatna in Tigiria Community Block, Cuttack District. Being located, just on State Highway(65), Nuapatna has been experiencing rapid spatial changes .

Nuapatna is traditionally known for its Khandua Silk and Ikat saree but now the traditional heritage is dying and needs certain incentives to revive it so that it can give good livelihood opportunities to the artisans. Hence its unique location on the tourism and handicraft trail has been leveraged to catapult the growth of the GP onto a successful trajectory of social and economic growth and sustainability.

We hope that this inclusive model of involving the growth of the residents will be a successful role model for other villages to follow suit in other parts of the state and country.

PROJECT TEAM

project head: s.s. ray

S. S. Ray
Director

Sudha Panda

Priyanka Mishra

Parthiba Chakraborty

Auro Ghosh

Chandana Parida

Satyam Jyoti

Subyasachi Mohanty

Avik Roy

Ashaprava Mohanta

Apurwa Agrawal

sudha panda, architect planner
priyanka mishra, urban planner
parthiba chakraborty, urban planner
auro ashish ghosh, conservation architect
chandana parida, sustainability specialist
satyam jyoti, conservation architect
sabyasachi mohanty, housing expert
sukanya dasgupta, urban designer
avik roy, product designer
ashaprava mohanta, climatologist
apurwa agrawal, infrastructure specialist

1 INTRODUCTION

1.1 Introduction

The Indian Constitution provides three tiers administrative levels; specifically the Union Government, the State Governments, and the Local Governments (urban and rural). 73rd and 74th Constitutional amendment act have created the third tier of local governance in urban and rural areas. The Eleventh and Twelfth schedule (Article 243G and 243W) of the constitution explain the jurisdiction of rural Governments (called Panchayats) and Urban Governments. The jurisdiction of rural Government includes agriculture, agricultural extension, rural housing and poverty alleviation programmes; while the jurisdiction of urban Governments includes urban planning including town planning, regulation of land use and construction of buildings, water supply, sanitation and solid waste management, slum improvement and upgradation and urban poverty alleviation etc. It is a well-established norm that while urban centers, towns and cities have progressed, the rural areas in India continue to suffer the ill effect of little or low development.

The Government of India has taken substantive measures to reach out to rural India .The role of Panchayats, as the third tier of governance and the tier closest to the people, becomes significant for assisting the people. Indeed during the Covid pandemic, the Panchayats have implemented a range of preventive and protective measures in the most effective manner which also came in for special praise by the Hon'ble PM during the course of his interaction with Panchayat functionaries on the occasion of National Panchayati Raj Day on 24th April, 2020.

The State of Odisha, in recognition of the effective role of Panchayats, has delegated the powers of the District Magistrate to GP head so as to enable them to play their role in controlling the spread of Coronavirus more effectively in the days to come. A new Central Sector Scheme called Survey of Villages and Mapping using improvised technology in village areas (SVAMITVA) has been launched by the Prime Minister on the National Panchayat Raj Day. It is proposed to map the "Abadi" areas in villages using professional-grade drones to provide the citizens with Property Cards in respect of their residential assets, a deed hitherto impossible. This will not only provide the people with an actionable record of rights but also lead to the sourcing of loans against these assets from financial institutions and provide the Panchayats with a way to tax these properties and raise their own revenues. The value of the residential assets is also expected to go up, as will realisable rentals.Through the use of drone-based survey of the rural residential assets by the Survey of India under this Scheme, maps of 1:500 scale will be produced, which will improve manifold the ability of the Gram Panchayat to plan interventions accurately.

Further, the Constitution Article 243G mandates for the Panchayats to be endowed with such powers and authority to empower them for the preparation of plans for economic development and social justice within their respective areas. Therefore, it's a natural corollary for the Panchayats to be capacitated to take over the larger canvas of local economic development in all spheres amongst their constituent villages, much in a manner similar to the spatial developmental planning undertaken by the Urban Local Bodies in the country. This potential for rapid economic development is particularly high in those Panchayats which are located on the National or State Highways. Up till now, the rural communities have not been able to fully exploit the vantage position offered to these villages in terms of high volume of traffic flow (cars, trucks etc) along these arterial highways and potential for commercial development of land along the NHs and SHs. Frequently, entrepreneurs from nearby urban areas have instead exploited the potential through the mushrooming growth of motels, hotels, restaurants and entertainment spots.

As already stated, the Panchayats constitute the third tier of government in the rural areas and have been specifically mandated by Article 243G of the Constitution for planning for economic development and social justice within their respective areas. However, in their present setup, the Panchayats neither have the means nor the capacity to undertake such an effort. Land is the most important natural resource which is indispensable for development activities and for meeting the social, economic and ecological requirements and aspirations of the people. Therefore, to begin with, if the Panchayats are to do any meaningful planning for economic development within their geographical jurisdiction, it is important for them to envision and correlate economic development with land use classification, both present and for the future.

1.2 Vision of Gram Panchayat Spatial Development Plan (GPSDP)

The Gram panchayat Spatial development plan for the Panchayat will act as the levers for

- Managing growth and change;
- Providing for orderly and predictable development;
- Protecting environmental resources;
- Setting priorities for developing and maintaining infrastructure and public facilities;
- Strengthening local identity;
- Creating a framework for future policy decisions;
- Promoting open, democratic planning;
- Providing guidance to land-owners, developers, and Government authorities

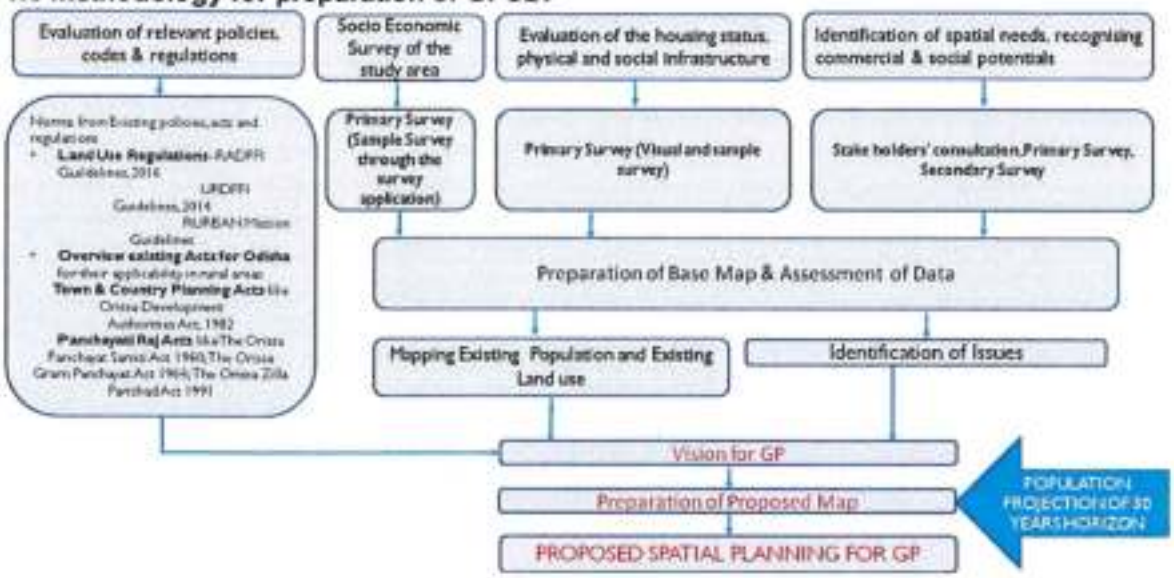
Well-designed rural communities and areas are places where people want to live and invest in the future. Therefore, there is a need for a scientific and orderly disposition of land resource, which would in tum foster economic development, and contribute to the ease of living.Community cohesion and pride would also manifest into improvement in quality of life.

1.4 Project Objective

Under the principal objective of preparation of Gram Panchayat Spatial Development Plan for rapid economic development of the GPs, the Specific objectives are:

- Assesment of socio-economic status of the study area.
- Evaluation of the housing status, physical and social infrastructure of the project area.
- Evaluation of relevant policies, codes & regulations.
- Identification of spatial needs, recognising commercial and social potentials through inclusive and participatory approach.
- Preparation of Spatial Development Plan.

1.5 Methodology for preparation of GPSDP



1.6 Data Collection Methods

Secondary Data has been collected from

1. Panchayat Office, Revenue Inspector Office, Sub Registrar Office
2. NRSA Maps
3.Government Reports on Policies, Regulations and Acts
4. Open data sources on Government Web Portals

Primary Data has been collected from

1. Panchayat Office and residents of GP
2. Visual Survey/ Reconnaisance in Field visits
3. Mobile App based Survey using GPSDP Survey developed by NRSA

Mobile App based Survey Sampling Strategy:
1. 12% of total households of GP
2. Random Sampling to represent all 18 Sahis(Settlements) present of GP

The National Remote Sensing Centre (NRSC) has come with this unique mobile application for GPSDP Survey wherein the geo locations of the respondents are captured along with their answers which can be populated on a map to know the positions.

The mobile application has been shown below:

2 REGULATORY FRAMEWORKS

2.1 Categorization of Villages for Planning

The census has given classification for the villages only according to their population size .No classification has been given by the Census for the rural areas on the basis of which rural areas can be categorized and used for future planning. However there is a need for categorization of the villages because the evolution of unplanned development in vicinity of urban centers in the extended *Abadi* area of the village leads to unauthorized development which later requires regularization and retrofitting. The interrelationship between metro cities and villages require the development plan for the provision of services and infrastructure. The anticipated spatial expansion of urban area makes it important to plan the rural areas in vicinity. The rise in real estate price leads to non-farm activities which require infrastructural services due to connectivity of the villages to the nearby metro city. The planning of the activities to be permitted in the fast-transforming villages needs to be decided, for making a sustainable environment in the village.

Ministry of Panchayati Raj, Government of India, has prepared the draft Rural Area Development Plan Formulation and Implementation Guidelines (RADPFI), 2016 covering various aspects of rural development including some rural land uses. The RADPFI guidelines aim to provide norms and spatial standards for making rural development plans, in synergy with the ICAP and RURBAN Mission.
The RADPFI Guidelines, 2016 has hence categorized the rural areas/villages on the basis of the following criteria:

1. Villages within Planning Area of the delineated Metropolitan area/city/town
2. Villages adjacent to corridor development
3. Villages in the interior
4. Villages according to Population Size

These guidelines focus on land use and spatial planning, formulate spatial standards for social service delivery and spatial connectivity through roads, public mode of transport and information technology. These aspects play a significant role in the process of development plan formulation while categorizing the villages/cluster, spatial planning of priority areas and preparation of annual budget. The villages are selected for spatial planning based on these categorization. As per the categorization of RADPFI guidelines, Nuapatna GP can be categorized as a

1. **Villages in the interior**-The characteristic of this village is

    a) More than 75% of population depended on primary activity (handloom industry)
    b) Isolation from urban areas in terms of distance and accessibility.(Nearest urban centre is Cuttack which is around 50 kms away)
2. Villages according to Population Size- Nuapatna falls under **Class II** category of villages as per Census 2011. The categorization given by Census 2011 is as follows:

Table 2.1-Categorisation of Villages as per Population Size.

Class Size	Population Size	Total Villages	Total Population	% of rural population	Average population	Remarks
Class I	10000+	4,682	7,23,66,805	8.68	15456	Large villages which may be purely depended on flourishing agricultural or other primary activities.
Class II	5000-9999	18,641	12,38,08,537	14.85	6642	Villageswhich are having population next to Class I village, and would also be urban, if near metropolitan areas.
Class III	2000-4999	96,388	28,86,37,987	34.63	2995	Medium sized villages which can be grouped together to form a cluster, if have geographical contiguity.
Class IV	1000-1999	1,39,136	19,74,96,806	23.70	1419	
Class V	500-999	1,41,761	1,032,91,220	12.39	729	Small sized villages where cluster plans would be feasible.
Class VI	200-499	1,14,726	39,68,3027	4.76	346	
Class VII	Less than 200	82,149	81,79,066	0.98	100	Isolated hamlet, where villages are located on

						hilly terrain, dessert or tribal areas, and spatial plans shall be based on connectivity and sharing of resources.
	Uninhabited	43,384	-	-		
	Total	6,40,867	83,34,63,448	100.00		

Source: RADPFI Guidelines,2016

RADPFI states that 58.33% of the villages have population between 1000-5000 and are ideal for preparation of Gram Panchayat Spatial Development Plan. However, the villages having more than 5,000 population, the Spatial Development Plan can be prepared on the basis of URDPFI guidelines, 2014.

2.2 Integrating with RADPFI Guidelines

RADPFI guidelines provide a methodological framework of spatial planning at village level to ensure integrated rural development. The spatial development plan prepared for Nuapatna Gram Panchayat is based on rural spatial standards formulated in these guidelines.
Land and land use are essentially State subjects. Proper planning of land and its resources allows for rational and sustainable use of land catering to various needs, including social, economic, developmental and environmental needs. Proper land use planning based on sound scientific, and technical procedures, and land utilisation strategies, supported by participatory approaches empowers people to make decisions on how to appropriately allocate and utilize land and its resources comprehensively and consistently catering to the present and future demands. There is a need for scientific, aesthetic and orderly disposition of land resources, facilities and services with a view to securing the physical, economic and social efficiency, health and well-being of communities. The land use prescription shall form the internal component of the Spatial Development Plan.

Table 2.2-Land Use and Associated Aspects for Built up areas under RADPFI guidelines	
Residential Residences*	Residential Residences*
Commercial/Economic	Retail shopping ,Informal Shop,Daily market, weekly, informal , regulated and specialised markets,Godowns, Storage ground
Industry	Service and Light industry(MSMEs, Household industries, agrobased industries, khadi industries, cottage industry, industries depended on indigenous raw materials and art and craft.Location of SEZ and Big Industries.
Educational	School ,Anganwadis,Training Centres,Vocational

	Institute,College ,Skill development institute/Organisation
Health Services	Subcentre/PHC/CHC,Dispensary,Pvt. Clinic,Vetrinary Hospital/Clinic,Hospital
Utilities and Services	ATM,Credit Society,Police thana,Cremation ground/Burial ground/Crematorium Community Hall,Dharamshala,Public ToiletSocial Welfare Centre
Special Area	Temple,Heritage area,Scenic Value Area, Government Restricted Areas
Recreational	Playgrounds,Garden,Chaupal,Public open space
Transportation &Communication	NH/SH/MDR/ODR/VR,Village access roads,Railways,Bypass,Bus stand/ Railway station/Integrated Customs
Land Use and Associated Aspects for NonBuilt up areas under RADPFI guidelines	
Barren and UnCulturable use	Agricultural land/ cultivable land/ culturable land
Permanent Pasture and other Grazing land	
Land under miscellaneous tree crops	
Culturable Waste Land	Agricultural land/ cultivable land/ culturable Fallow land other than land
Fallow land other than Current Fallows	
Current Fallows	
Net Sown Area	

Source: RADPFI Guidelines,2016

Since villages often, do not have clear cut demarcated zones RADPFI Guidelines allow Gram Panchayat to modify the land use zones according to the local situation. (, For instance, there may be a household serving as a residence and a shop and a micro scale household cottage industry) However the restricted/prohibited activities which pollute the air, water and land resources in the local area are mentioned in the land-use plan. The socio cultural environment of the community in the village is considered while preparing the land-use plan.

2.3 Integrating with RURBAN Mission

The Shyama Prasad Mukherji Rurban Mission (SPMRM) makes provision for the preparation and implementation of an Integrated Cluster Action Plan (ICAP) for planning and development of rural areas. A rurban cluster would be a cluster of geographically contiguous villages with a population of about 25,000 to 50,000 in plains and coastal areas, and with a population of 5,000 to 15,000 in desert, hilly or tribal areas. Clusters of villages would follow administrative convergence units of gram panchayats and shall be within a single block or tehsil for administrative convenience.

Table 2.3 Proposed Model Rural Land Uses for Rurban Clusters

Land Use Category	Proposed Permitted Activities	Colour Code
Residential	Predominantly residential may house a small shop, tiny industrial unit (non-hazardous), cattle and poultry shed, small storage for own agricultural produce, and home tuition space	
Commercial	**Formal commercial activities**: Retail shops, market complex, godowns, storage units; grain and vegetables mandi, slaughter house. **Informal commercial activities:** Weekly markets, haats and space for selling cattle	
Industrial	Medium, small and micro enterprises (MSMEs), household industries, agro-based industries, khadi and cottage industries, small SEZ, heavy industry	
Public and Semi-Public	Anganwadis, school, training institute, skill development centre, sub health centre, dispensaries, primary health centre, maternity centre, community health centre, hospital, private clinic, veterinary clinic and hospital, community hall, dharmashala, social welfare centre, bank and ATM, RO plant, cooperative and credit society, police post and station, cremation ground, burial ground, temple, mosque, church, and other religious institutions, government and private offices, panchayat ghar, chaupal, common village land, and government land	
Utilities	Water (W), wastewater (S), drainage (D), solid waste (SW), electricity (E)	
Transportation and Communications	National and state highway, district road, village road, cycle track, railway line, railway station, bus stand, freight complex, truck terminal, water ways, ferry ghat, transmission and communications	
Recreational	Park, playground and maidan or public open space	
Agriculture	Agriculture, horticulture, sericulture, animal husbandry, poultry, dairy farm, fish farming area, aqua-culture, nursery, land used for growing animal fodder, *gaushala*, and land currently being used for non-agricultural activities (tube well shed, storage space, etc.) incidental to agriculture	
Fallow land	Cattle grazing	
Mining	Brick kiln and shallow mining, stone crushing	
Waste land	Cattle grazing	
Protected Forests	Wood and fodder for cattle by local population as per government guidelines, tourism, tracking	
Water Bodies	River, canal, lake, well, pond, backwater, lagoon, wetland, mangroves, marshy lands, salt pans	

Source: RURBAN MISSION Guidelines,2019

2.4 Integrating with State Panchayati Raj Acts and Town and Country Planning Acts

Panchayati Raj System in Odisha

The three tiers Panchayati Raj System was introduced in the state with the enforcement of the Orissa Panchayat Samiti and Zilla Parishad Act, 1959, w.e.f. 26th January 1961 which was further strengthened with the implementation of Orissa Zilla Parishad Act, 1991 w.e.f. 1st November 1993.

The major objective of the Panchayati Raj System is to entrust the people with the management of local affairs and develop their capacity for self-governance. In the three tier system of Panchayati Raj, the Panchayat Samiti functions as the inter-mediary between Zilla Parishad at district level and the Gram Panchayat at village level and each of them functions within its own jurisdiction for the development of the rural areas of the district for a normal tenure of five years.

Zilla Parishad, the apex body in the district constitutes the following members. Each Panchayat Samiti in the district elects two members to the Zilla Parishad. Elected Members of Legislative Assembly and Members of Parliament from the district become the members of the Zilla Parishad.

Chairmen of all Panchayat Samities of the district, Chairman of the Municipalities/ NACs and Co-operative banks of the district, the district officers of Health, Education, Public Health, Agriculture, Forests, Works and Co-operative development become the ex-officio members of Zilla Parishad.

There is reservation of seats for scheduled caste and scheduled tribe members on the basis of proportion of their population while 1/3rd of the seat is reserved for women members including scheduled caste and scheduled tribe women. The members of the Zilla Parishad elect one amongst them as President and another as Vice President. The Collector of the district acts as the Chief Executive Officer. The Zilla Parishad, besides formulating policies for the key areas of rural development in the district, monitors and evaluates the various developmental programmes of the government, which are implemented by the Panchayat Samities in their respective areas of the district.

The Panchayat Samities, which act as the inter-mediary between Zilla Parishad and Gram Panchayats were established throughout the state in accordance with the provisions of the Orissa Panchayat Samiti Act, 1959 and its jurisdiction is co-terminous with the area of the Community Development Block. The Block Development Officer is the Executive head of the Samiti. Other Block level officers are the official members. Sarpanchs of all Gram Panchayats within the C.D. Block become non-official members of the Panchayat Samiti. The elected members of the Panchayat Samiti elect one amongst them as the Chairman and another as Vice-Chairman, of whom one must be a woman. Panchayat Samities are not only responsible for the planning, execution and supervision of all types of Governmental development programmes in their areas but also look after the spread of primary education, management of trust and endowments etc. and all other developmental matters in their respective localities.

The Gram Panchayat at the primary level is constituted of a group of villages, which are divided

into wards. The voters of each ward directly elect ward members. The voters of all the wards under the Gram Panchayat elect the Sarpanch of the Panchayat and one Naib Sarpanch is elected from amongst the ward members to look after the work of the Panchayat. This primary unit of democratic de-centralisation is the main agency to mobilize the rural manpower. Functions of the Gram Panchayat include sanitation, supply of drinking water, maintenance of ferry ghats and wells, construction and maintenance of Panchayat roads, cattle pounds, providing streetlight and implementing different agricultural schemes in the villages under its jurisdiction.

Town and Country Planning Acts in Odisha

Under the Orissa Town Planning and Improvement Trust Act, 1956, provisions are made for the preparation of master plans for urban areas and setting up of urban improvement trusts. However little is given about areas beyond the urban boundaries in the state. Orissa Development Authorities Act, 1982 also provides for the development of urban and rural areas according to the plan. Development areas can be declared for the purposes of proper development of such areas under this act (Rurban Mission,2019).
There are District Planning Commitees(DPC) in Odisha under the Odisha State Act No. 1282 Cuttack, October 8, 1998 where in DPCs have been constituted in 26 districts of the state with an MLA from the district as Chairman. The function of DPC as per the State Act is

- Consolidate the plans prepared by the Panchayats and the Municipalities in the district.
- Prepare a draft development plan for the district as a whole. Review implementation and municipalities and to make such recommendation as deemed appropriate.

2.5 Norms and Standards for Planning

Norms and Standards for Infrastructure provision and construction activities are essential to promote development of amenities as well as sustainable built up environment for human habitation. There have been standards and norms in existence and enforced to a certain extent by the relevant statutory authorities in urban areas but compliance to the same in rural areas is virtually non-existent. Hence the construction activities in rural areas are by and large unregulated resulting in organic growth which is characterized by haphazard development and access to basic facilities remains a big challenge in rural areas.

2.5.1 Habitat and Commercial Planning
2.5.1.1 RADPFI Guidelines

While planning for housing in rural settlements the following factors shall be taken into consideration:

- Ecosystem and Biodiversity.
- Topography with its direct effect on climate, likelihood of natural disasters, natural drainage, etc.
- Identity of the place rooted in its culture and heritage.
- Nearness and connectivity with nearby urban centers.
- Occupation related requirements.

- Water and Waste management.
- Land records and Land tenure.
- Site selected shall be conveniently approachable and suitably developed and shall not
  be subjected to water logging/flooding.
- Facilities like branch of co-operative bank, a fertilizer depot, a veterinary hospital, market place and a branch of the co-operative consumer store besides facilities for educational and health care should be available within a maximum distance of 5 km from any settlement.

- Proposed Road Hierarchy

Norms for Low Income Housing development.

- Plot size : 80 m2 , Minimum
- Density (Gross) : 60 plots per hectare, Maximum
- Minimum frontage : 6 m
- Ground coverage : 33percent (subject top a maximum of 50 percent)
- Floor area ratio (FAR) : 2, Maximum
- Open spaces : 1.21 hectare open space for a village with 200 houses.

2.5.2 Social Infrastructure

2.5.2.1 RADPFI

Table 2.4-RADPFI Norms for Socio-cultural Use

Category	Population server per unit	Minimum land area requirement
Crematorium	One per block	0.5 hectare
Cremation Ground	One per gram panchayat of 5000 population	400 square metres
Burial ground	5000 residents observing burial rituals in a habitation or a gram panchayat	500 square metres
Open spaces /Parks	One housing area park per 5000 population and neighborhood park for 15000	0.5 hectare and 1 hectare respectively
Playground/ Ground for fairs and festivals	One per 5000 population	1 hectare
Religious Places	5000	400 sq metres
Fire Station	2 lakh population or 10 km radius	0.6 hectare

2.5.2.2 Norms as per RURBAN Mission

Table 2.5-RURBAN Norms for Socio-cultural Use

S. No	Amenities at Village	Facilities	Applicable	Population

	Level		Standard	Range
1	Skill Development Center	Number of people employed in gainful economic activities	Minimum one person per household	1000-5000
		Number of skilled members in a household	Minimum one person per household	
2	Agriculture Services and Processing Center	Distance to agri° processing services	At least one within 10 kilometre	1000-5000
		Distance to market facilities like mandis and agro markets	At least One within 5 kilometre	
3	Community Health Centre	1 for every 50,000 population		
4	Primary Health Centre (minimum 6 beds for observation purposes)	1 for every 20,000 in hilly areas and 30,000 in plain areas		
5	Health Sub centre	1 for every 5,000 in plain areas and 3,000 in hill areas		3000-5000
6	Dispensary	1 for every 5,000		
7	Veterinary Hospital	1 for every 50,000 persons		
8	Veterinary Clinic or Centre	1 for every 5,000 persons		
9	Primary School	1 for every 2,500 and within 1 km distance from every habitation		1 for 2500
10	Secondary School	1 for every 5,000		1 for 5000
11	Higher Secondary School	1 for every 7,500		
12	Number of	At least one		

	households with at least one digital literate	person per household		
13	Number of people with digital know" how	At least 20 percent population		
14	Internet connectivity through fibre optic cables	Each village is connected with fibre optic network		
15	Citizen service centres at the village level	1 for every 5,000 persons or 1 per village panchayat (Gram Sabha)		1/1000
16	Access to LPG connections at the household leve	Each household should have access to LPG		
17	Access to LPG distributary services at village level	One LPG agency per 1,800 households		1/2500

Table 2.6-RURBAN Guidelines for Reserving Land for Public Purposes at Village Level

S. No	Amenities at Village Level	Population Range	Area Requirements	Related Road widths
1	Skill Development Center	1000-5000	300-500	Hilly areas is >=4m and Plain areas is >=6m
2	Agriculture Services and Processing Center	1000-5000	300-500	Hilly areas is >=4m and Plain areas is >=6m
3	Warehouses for Cold and Dry Storage	1000-5000	300-500	Hilly areas is >=4m and Plain areas is >=6m
4	Primary School	1 for 2500	800	Hilly areas is >=4m and Plain areas is >=6m
5	Secondary School	1 for 5000	4000	Hilly areas is >=4m and Plain areas is >=6m
6	Health Sub centre	3000-5000	800-1200	Hilly areas is >=4m and Plain areas is >=6m
7	LPG Distribution Centre	2500	100	Hilly areas is

				>=4m and Plain areas is >=6m
8	Common Service Centre	1000	100	Hilly areas is >=4m and Plain areas is >=6m

2.5.3 Physical Infrastructure

Norms as per RADPFI Guidelines

2.5.3.1.Water Supply

While implementing the Rural Water Supply Schemes, the following norms can be adopted for providing potable drinking water for the population The minimum supply for areas with extreme conditions of access of water resource, 40 litres per capita per day can be set as the minimum. In addition, provision should be allowed at 30 lpcd for animals in hot and cold desert/ecosystems .With normal output of 12 litres per minute, one handpump or standpost is estimated for every 250 persons. In case of an independent habitation /hamlet /Wadi /Tola /Majra / Mohra etc, if their population is less than 250 persons and there is no potable water source within its location, one source may be provided . A rural habitation not having any safe water source with a permanently settled population of 20 households or 100 persons, whichever is more, may be taken as the unit for coverage with funds under the Accelerated Rural Water Supply Programme. However, the State Government could cover any habitation regardless of its size/population/number of households.

The above is the minimum to be provided. The recommended provison is in the range of 70-100 lpcd within walking distance of 50 metres. Individual states can adopt higher norms , supplying above 100 lpcd.

2.5.3.2 Sanitation

Proper sanitation provisions is necessary for a healthy habitat. The Swacch Bharat Mission aims to establish sanitary facilities in all houses, schools, anganwadis, places of community congregation, and for Solid and Liquid Waste Management activities through awareness generation, triggering behavior change and demand segregation.

Dwelling with individual conveniences shall have at least the following fitments:

- One bathroom provided with a tap,
- One water closet
- One nahani or sink raised from the floor with a tap.

Similarly provison of public or community toilets is to be taken up in rural areas. Public toilets are meant for floating population, i.e, for people on the move and community toilets are meant for a community that resides in the area and has a common provision of convenience. The following norms for number of seats, urinals, bathrooms and area for washing may be adopted:

Table 2.7- RADPFI norms for Sanitation

Types of toilets	Toilet seats	Bath Units	Urinal units	Clothes washing area

Community toilets	One seat per 50 users	One unit per 50	One unit per 200-300 users	4 - 5 sq. metres per 10 toilet seats; min 1.5m x 1.2 m
Public toilets near railway stations (may be used at all hours)	One seat per 100 users	One unit per 70	One unit per 300-500 users	4 - 5 sq. metres per 30 toilet seats; min 1.5m x 1.2 m
Public toilets near market place/ offices (will mostly be used during working hours)	One seat per 100 users	One unit per 50	One unit per 200-300 users	4 - 5 sq. metres per 10 toilet seats; min 1.5m x 1.2 m

2.5.3.3 Solid and Liquid Waste Management

Solid Waste: Any waste other than human excreta, urine and wastewater is called solid waste. Solid waste can be classified into two types: biodegradable and non-biodegradable. Biodegradable waste is that which can be decomposed by biological processes, for example, vegetable peel, food, farm waste, and so on. Organic waste is biodegradable and can be recycled; and Non-biodegradable waste cannot be broken down by biological processes, for example, paper, glass, metal, and so on. Though, the form of waste (both solid and liquid) generated in rural areas is predominantly organic and biodegradable yet is becoming a major problem to the overall sustainability of the ecological balance.

For e.g. it is estimated that rural people in India are generating liquid waste (greywater) of the order of 15,000 to 18,000 million liters and solid waste (organic/recyclable) 0.3 to 0.4 million metric tons per day respectively (DDWS-UNICEF, 2008). Generation of solid waste in rural areas ranges between 50 gm/cap /day and 250 gm / cap / day as mentioned below:

Rural (Peri-urban or Urban outgrowth) 150 to 250 gm / cap / day.

Rural (Remote /Tribal) 50 to 150 gm / cap / day.

Liquid Waste: Liquid waste is water which has been used once and is no longer fit for human consumption or other uses where clean water is required. Broadly, there are two types of liquid waste or wastewater :

- Black water is wastewater from toilets containing fecal matter; and

- Gray water or sullage is wastewater from bathrooms or kitchens. Gray water generally contains fewer pathogens than black water.

The waste management in rural areas can be initiated through sensitization and cooperation of people. The process of waste segregation and collection is to be encouraged for a collective disposal and treatment. Inorganic wastes can be recycled locally or can be collected to be sold off for recycling. The various ways to manage solid waste, one of them is as follows:

Composting: Decomposition of organic waste is a natural process. Rural waste generation is largely organic in nature and can be put to an organized method of producing compost manure.

There are following options for composting of wastes:

- Pile method of Composting
- NADEP Method

One hectare of composting site can handle 83.33 tonnes per day. A composting site for biodegradable waste collected in the village can be accordingly built on a site away from the habitation as well as water body, close to the agricultural fields, where the manure generated can be put to use. The **non biodegradable** waste generated of some value like , paper, plastic , metal can be sold off through the central recycling chain through scrap dealers. In spite of composting, re-use and recycling, some waste remains untreated/unmanaged which requires fifinal disposal, either by incineration or by **land filling**.

Gram Panchayat can organize themselves to construct and maintain landfill. Gram Panchayat may make use of Youth Club members/Women Self Help Groups.

Selection of Landfill Site: Gram panchayat in consultation with Zilla Parishad/ BlockPanchayat (as the case may be) should select the landfill site which should be:

- Located at the outskirts of the village
- Accessible
- On vacant/uncultivated land
- Located in the natural depressions with slight slopes
- Site should be such as to avoid surface water and ground water pollution.

Norms as per RURBAN Mission

Table 2.8- RURBAN Mission Norms for Physical Infrastructure

Components	Facility	Applicable Standard	SLB (per cent)
Sanitation	Individual household toilets	One in every household	100
	wastewater collection network, Collection of wastewater	Should be there	50
	wastewater treatment facility	One for 25,000 people in a rurban cluster	50
Piped water supply	Household water supply connections	One connection per household	100

	Per capita supply of water	70 Litres Per Capita Per Day	100
	Duration of water supply	A minimum of two hours uninterrupted water supply every day	100
	Quality of water Supplied	pH value 6.5 – 8.5; E. Coli is nil; TDS less than 500.	100
Solid Waste Management	Household level coverage	Door to door collection	50
	Efficiency of collection of solid waste	Coverage of all households	50
	Extent of segregation	Bio" degradable and non" biodegradable	50
	Extent of scientific disposal	Landfill sites	50

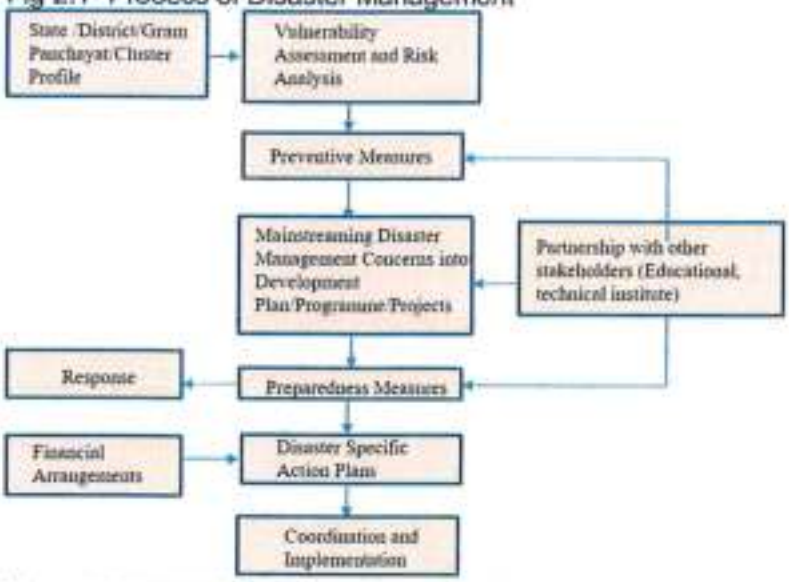
2.5.4 Disaster Management

2.5.4.1 RADPFI Guidelines

The Village Disaster Management Plan (VDMP) emphasizes the local level as the first line of response, since communities are often the most familiar with local sources of risk and the first on the scene after disaster strikes. It can be used to tap human and material resources in the aftermath of a disaster and describe the roles and responsibilities of the concerned officials and teams related to that village.

Development of Village Disaster Management Plan is the most important ingredient in implementing Community Based Disaster Risk Management in any area. It refers to a list of activities a village agrees to follow to prevent loss of life, livelihoods and property in case a disaster .It also identifies in advance, action to be taken by individuals in the community so that each one knows what to do when a disaster strikes or when a warning is received. The main objective is to empower the community to deal with disasters on their own as a way of life. The following figure shows the process of disaster management.

Fig 2.1- Process of Disaster Management



(Source: NDMA Guidelines, Preparation of State Disaster Management Plans)

Prevention Preparedness and Mitigation Measures

Prevention consists of actions that reduce risk from natural or manmade disaster incidents. It is required to list and elaborate all types of measures (like - building codes, floodplain management, storm water management, coastal area zoning and management plan, etc.) – planned and implemented by the districts as a part of prevention measures. It is good to have long term mitigation goals in place and connect these goals with measures that district has planned and implemented.

These goals may include (but not limited to):

1. Provide better early warning methods for flood, storms, cyclone
2. Reduce the destruction and loss of life within buildings
3. Provide for safer environments for transportation systems
4. Eliminate flooding in populated areas
5. Ensure redundant water supply systems
6. Reduce environmental degradation and restoration of livelihood
7. Reduce effects of the natural environment on the infrastructure
8. Ensure redundant power systems on critical facilities
9. Ensure adequate materials available for road maintenance

Protection reduces or eliminates a threat to people, property and the environment. Primarily focused on adversarial incidents, the protection of Critical Infrastructure and Key Resources (CIKR) is vital to local habitations, national security, public health & safety and economic vitality. Protection includes actions or measures taken to cover or shield assets from exposure, injury or destruction. Protective actions may occur before, during or after an incident and prevent, minimize or contain the impact of an incident.

Mitigation, with its focus on the impact of a hazard, encompasses the structural and non˚ structural approaches taken to eliminate or limit a hazard's exposure; impact on people, property and the environment. Besides flood proofing, river desiltation, change in land use pattern and shelter belt plantation.

Examples of mitigation activities also include:

1. **Town Planning Act**: Planning, adopting and enforcing stringent building codes, flood-proofing requirements, seismic design standards and cyclone wind-bracing requirements for new construction or repairing existing buildings.
2. **Zoning Regulations**: Planning and adopting zoning ordinances that steer development away from areas subject to flooding, storm surge or coastal erosion.
3. **Development Control Regulations**: Incorporate the disaster management concerns into development. This should include all Government Sponsored Developmental Programs and Schemes.
4. **Undertaking retrofitting** work on public buildings to withstand ground shaking or cyclone-strength winds.
5. **Specificity of disaster:**
6. **Land use regulation**: Planning and building community shelters and cyclone safe rooms to help protect people in their homes, public buildings and schools in hurricane and tornado-prone areas.
7. **Safety norms** for economic and social infrastructures including places of worships and crowd management: Steps taken for developing and implementing public safety norms for critical infrastructures and places of worships.
8. **Capacity Building for Mitigation**: Steps taken for human resource development and capacity building for effective disaster mitigation at District Level.
9. **Awareness generation** on disaster mitigation.

For further information National Disaster Management Guidelines and Handbook for Effective Disaster Management at Micro Level- NDMA&IGNOU, can be consulted.

Roles and Responsibilities at local level

Local Authorities have the following duties:

i. To provide assistance to the District Collector in disaster management activities.

ii. To ensure training of its officers and employees and maintenance of resources so as to be readily available for use, in the event of a disaster.

iii. To undertake capacity building measures and awareness and sensitization of the community

iv. To ensure that all construction projects under it conform to the standards and specifications laid down.

v. Each department of the Government in a district shall prepare a disaster management plan for the district. The local authorities need to ensure that relief, rehabilitation and reconstruction activities in the affected area, within the district, Block, Cluster and Gram panchayats are carried out.

vi. Trust / Organisations managing Places of Worships & Congregation

a) Each establishment / organisation identified as —critical infrastructure and key resource in a Gram Panchayat or cluster.

b) Including places of congregation in a Gram Panchayat shall prepare —on-site and —off-site disaster management plan.

c) Carry out mitigation, response, relief, rehabilitation and reconstruction activities.

Community Groups and Volunteer Agencies:

i. Local community groups and voluntary agencies including NGOs normally help in prevention and mitigation activities under the overall direction and supervision of the
DDMA or the Collector.

ii. They should be encouraged to participate in all training activities as may be organized and should familiarise themselves with their role in disaster management.

3 CONTENTS OF THE GRAM PANCHAYAT SPATIAL DEVELOPMENT PLAN

Rural development is the main pillar of state development. Rural Orissa has lagged behind in development because of many historical reasons. The thrust of policies and programmes of Panchayati Raj department is on all round economic development and social justice through empowerment. The activities of Panchayati Raj Department can be classified into following categories:

Poverty Amelioration Programme

Orissa's poverty is an enigma for planners and administrators. The state is endowed with rich natural resources in form of vast mineral deposits, forests, fertile land, plentiful surface and ground water resources, long coastline and picturesque tourist potential. But such resources have not been exploited adequately to raise the PQLI of people. Poverty eradication strategy therefore has to be a combination of natural and human resources management. This programme has four major components and these are :

1. Wage-employment Programme.
2. Self Employment Programme.
3. Housing for the poor.
4. Development of Rural Infrastructure.
5. Marketing initiative through ORMAS.

3.1 Panchayati Raj Institutional setup in Odisha State and its linkages

Orissa Grama Panchayat Act was enacted in the year 1948. Subsequently in the year 1961, 3 tier system of Panchayati Raj Institutions was introduced in Orissa. Over the last 50 years Panchayati Raj Institutions have emerged as the powerful institutions in bringing about rapid and sustainable development and socio-economic transformation in rural Orissa. It has an integrated prospective towards improving the quality of lives of rural people and ensuring equity and effective peoples' participation. 73rd amendment of the Constitution has conferred constitutional status to Panchayati Raj Institutions.

The Provisions of Panchayats (Extension to Scheduled Areas)Act aims at empowering Panchayati Raj Institutions in Scheduled areas for economic development and social justice. In the year 2002, election to 3 tier of Panchayati Raj Institutions held in conformity with 73rd amendment and PESA thereby empowering tribal people as envisaged under the PESA. The Government have the obligation to bring up Panchayati Raj Institutions as Institutions of Self - Government as per 73rd amendment of the Constitution of India 1992. 73rd Amendment marks a new era in the federal set up of the country and provides constitutional status to the PRIs.

The prime objectives of the three tiers Panchayati Raj System are to eradicate poverty, uplift standard of living of people in the rural areas, and bring about a healthy society by creating awareness for hygiene, sanitation and eradication of illiteracy. The state has established a State Election Commissioner to conduct the election of PRIs. The 73rd amendment of the Constitution mandates Government to endow the Panchayati Raj Institutions with such powers and authority as may be necessary to enable them to function as institutions of self-Government. It also provides that powers and responsibility shall be devolved upon PRIs subject to such conditions

as may be specified therein, with respect to the preparation of plans for economic development and social justice and implementation of schemes for economic development and social justice as may be entrusted to them including those listed in the 11th Schedule.

Odisha at a Glance:

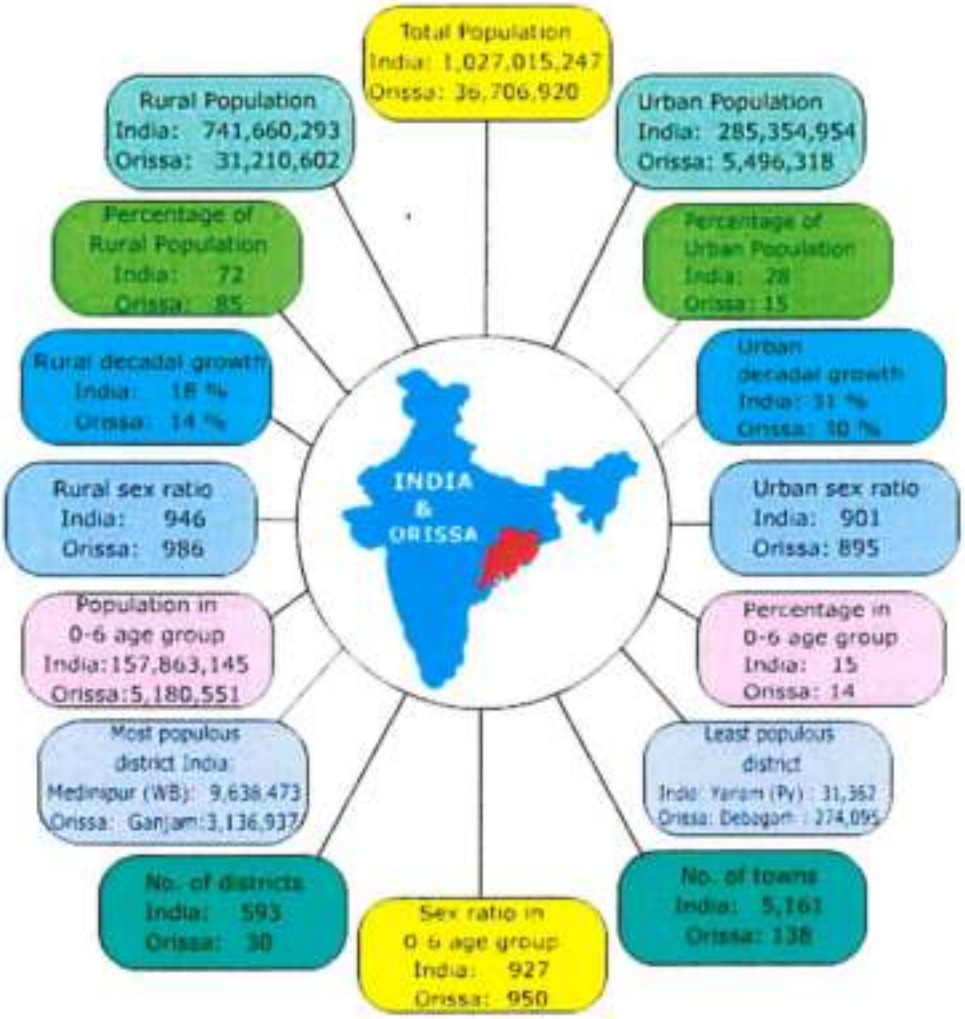


Fig 3.1- Odisha at a glance

Basic Services

Panchayats at village levels are expected to perform certain obligatory functions to provide basic services to all the people living in the area. Gram Panchayats in Orissa have been empowered to levy taxes and manage community assets created out of different poverty eradication and area development schemes. They as constitutional bodies represent the model of community participation and social empowerment. Basic services among others include:

1. Primary education
2. Primary health·
3. Safe Drinking water·
4. Sanitation and street lighting·
5. Environment protection·
6. Common property resources (CPR) management

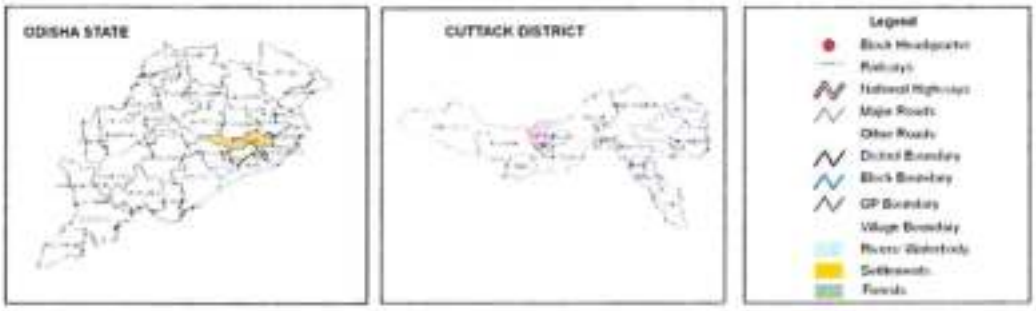


Fig 3.2- Location of Tigiria Block and Cuttack District in Odisha State

3.1.1 Cuttack District

Cuttack district is situated in the Mid-Eastern part of Odisha. It is surrounded by Dhenkanal district in the north, Angul district in the north-west, Jajpur district in the north-east, Khurda district in the south, Nayagarh district in the south-west and Jagatsinghpur district in the south-east. Extending over an area of 3932 sq. Kms, it occupies 2.52% of the State's area. The district has 3 Sub-divisions namely Cuttack, Athagarh and Banki; 11 Tahasils namely Cuttack, Niali, Salipur, Tangi, Mahanga, Kishorenagar, Athagarh, Baramba, Narasinghpur, Tigiria and Banki; 14 Blocks namely Cuttack- Sadar, Kantapada, Mahanga, Niali, Tangi- Choudwar, Salipur, Nischintakoili, Baranga, Athagarh, Tigiria, Baramba, Narasinghpur, Banki and Banki" Dampara; 9 Towns, 1 Municipal corporation, 2 N.A.Cs., 35 P.S., 342 G.Ps, 1969 villages (1873 inhabited and 96 uninhabited), 10 Fire Stations and 10 Assembly constituencies. The district has a population of 1936310 as per 2011 Census with population density of 667 per square kilometer area. Cuttack district is divided into two climatic zones viz. East and South Eastern Costal Plane and Mid-Central Table land. Based on variation in topography, soil type, availability of irrigation and cropping pattern, each agro-climatic zone has been divided in to several Agro-Ecological Situations or farming situations.

The district comes under two agro-climatic zones viz. East and South Eastern Coastal Plain & Mid Central Table land characterized by Hot & Humid and Hot & Moist Sub-Humid climate. The average annual rainfall is 1424.3mm. The maximum temperature remains 43oC during May-June & minimum 11oC in December. The maximum Relative Humidity is 91% and the minimum is 66%. Crop Evapo-Transpiration (ET_o) during summer (March to May), rainy (June to September) and winter periods comes to 712 mm, 756 mm and 784 mm with an annual value of 2252 mm. Due to undulated terrain and sloppy areas, in Athagarh & Banki sub-division, maximum amount of rainfall goes as runoff; hence rain water conservation and ground water recharge has been given priority in these seven blocks (Including Tangi Choudwar)

Cuttack District – Tigiria Block – Land Use Map

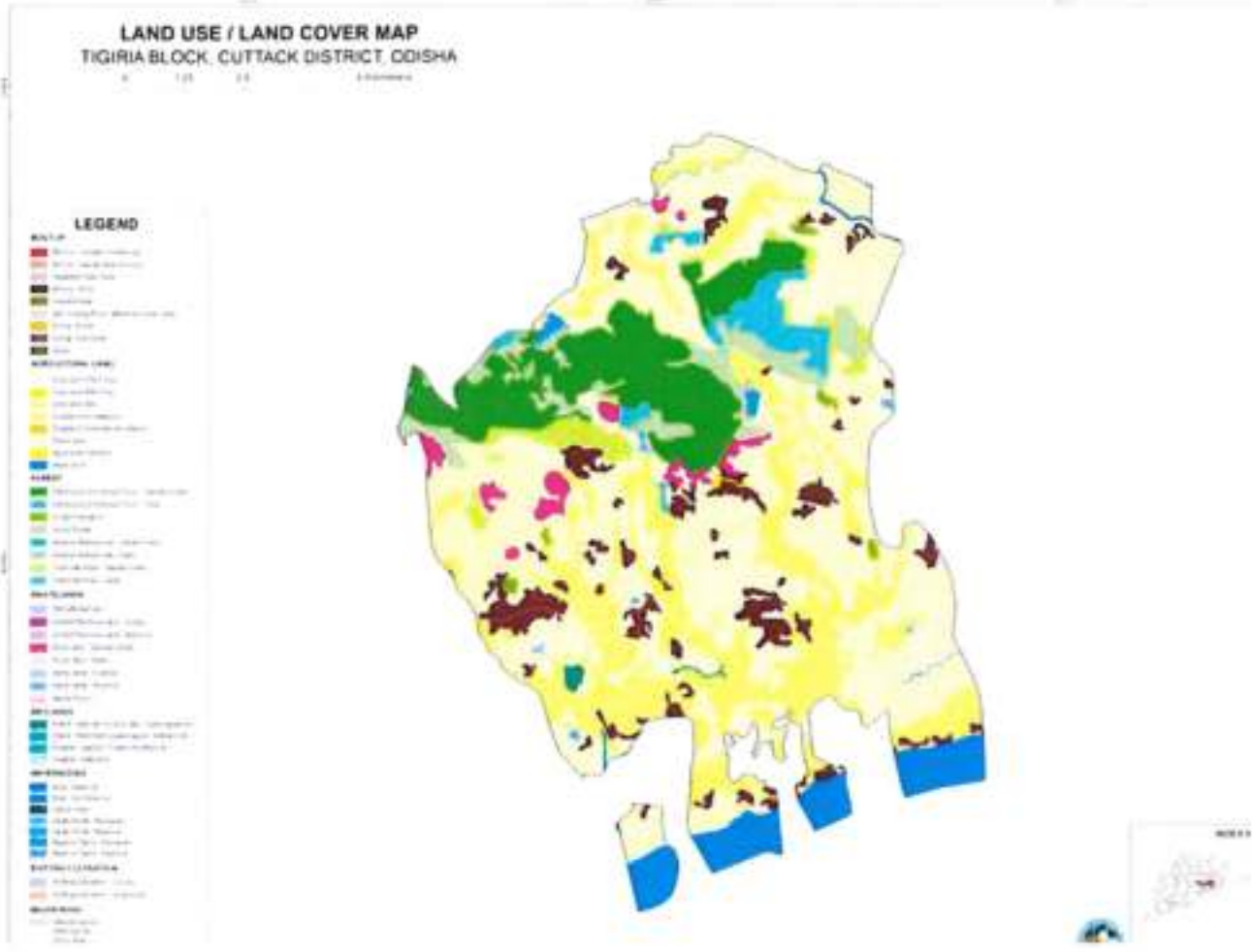


Fig 3.3- Land Use Land Cover Map of Tigiria Block

3.1.2 Tigiria Block

There are 10 Panchayats with a total of 50 villages under the Tigiria administrative division.Tigiria Block of Cuttack district has **total population of 74,639** as per the Census 2011. Out of which 38,690 are males while 35,949 are females. In 2011 there were total 16,519 families residing in Tigiria Block. The **Average Sex Ratio of Tigiria Block is 929**.

As per Census 2011 out of total population, 10.8% people lives in Urban areas while 89.2% lives in the Rural areas. The average literacy rate in urban areas is 83.5% while that in the rural areas is 81.7%. Also the Sex Ratio of Urban areas in Tigiria Block is 915 while that of Rural areas is 931.

The population of Children of age 0-6 years in Tigiria Block is 7862 which is 11% of the total population. There are 4103 male children and 3759 female children between the age 0-6 years. Thus as per the Census 2011 the **Child Sex Ratio of Tigiria Block is 916** which is less than Average Sex Ratio (929) of Tigiria Block.

The total literacy rate of Tigiria Block is 81.9%. The male literacy rate is 79.16% and the female literacy rate is 66.94% in Tigiria Block. In Tigiria Block out of total population, 25,643 were engaged in work activities. 82.7% of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 17.3% were involved in Marginal activity providing livelihood for less than 6 months. Of 25,643 workers engaged in Main Work, 4,819 were cultivators (owner or co-owner) while 4,882 were Agricultural labourer.

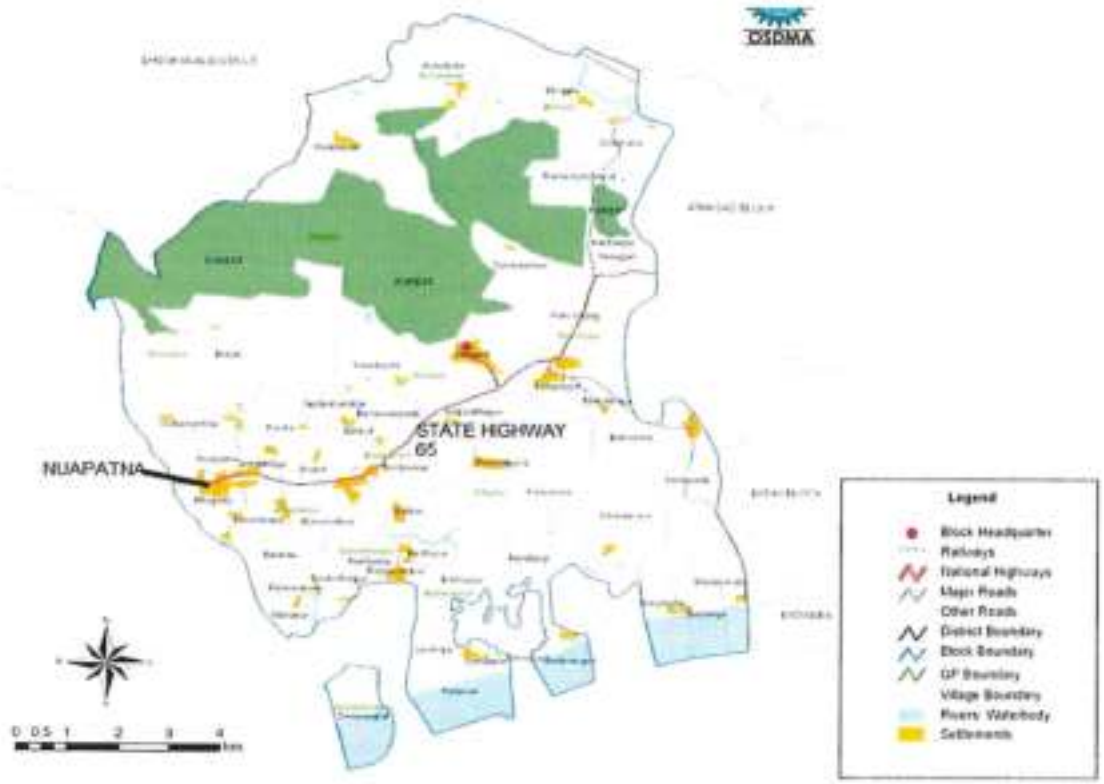


Fig 3.4- Location of Nuapatna on State Highway 65 in Tigiria Block

Duties to be performed to achieve the Panchayati Raj Mission:

a) To plan and execute development programmes, scheme & works relating to Community Development.
b) Management, Control and Spread of Primary Education in the Block area.
c) Management & Control of the Public Distribution.
d) To provide Social Security to Weaker Section.
e) To provide Wage Employment with the Goal of Reducing unemployment and under employment to a negligible level and to provide food security against hunger and to create durable assets.

Details of Services Rendered:

a) Rural connectivity.
b) Rural housing for BPL families under IAY.
c) Creation and improvement of water bodies.
d) Distribution of OAP/ NOAP/ ODP/ WP.
e) Sponsoring loan application under income generating scheme.
f) Training program for Swarojgari.
g) Construction of school/ Anganwadi building, etc.
h) Overall development in all sections.
i) Providing job to job seekers regd. under MGNREGS.
j) Distribution of Pre-Matric Scholarship of SC & ST Students
k) Rural housing under "MOKUDIA" yojana to rural poor.

3.2 Current Flagship programs of Govt. of India and Odisha Govt. in Nuapatna

The **Mahatma Gandhi National Rural Employment Guarantee Scheme** is a "People's Act" in several senses. The Act was prepared through a wide range of consultation with people's organizations. Second, the Act addresses itself chiefly to working people and their fundamental right to life with dignity. Third, the Act empowers ordinary people to play an active role in the implementation of employment guarantee schemes through Gram Sabhas, social audits, participatory planning and other means. More than any other law, MGNREGA is an Act of the people, by the people and for the people.

MGNREGA calls for the formulation of a Rural Employment Guarantee Scheme (REGS) by each State Governments within six months of the date of commencement of the Act. The purpose of the Scheme is to give effect to the legal guarantee of work, by providing at least 100 days of guaranteed employment to every rural household whose adult members volunteer to do unskilled manual work subject to the conditions of this Act. Each Rural Employment Guarantee Scheme is required to have the minimum features specified in Schedule I and Schedule II of the Act.

Name of the Programme	Objectives	Implementation Strategy
Mahatma Gandhi NREGS 	• To provide 100 days guaranteed wage employment to each household in a village with in a financial year who volunteers to do unskilled manual work. • Creation of durable income generating assets • Prevention of rural-urban migration • Enhancement of livelihood security ensuring social implementation.	• Approval of Action Plan through Palli Sabha & Grama Sabha. • Registration of name in GP to set job card. • Application to GP/PS & other executing agency to provide work. • As per MGNREGS guideline. • Convergence with other flagship programmes • Convergence with line department programmes

Name of the Programme	Objectives	Implementation Strategy
DAY-NRLM 	• To enhance the socio economic condition of the rural poor through promotion of sustainable community based institutions. • Mobilization of targeted poor through SHG, Federation & CLF / GPLF. • Creating effective institution platform for increase of household income of rural poor.	• Implemented through DPM / BPM Block livelihood coordination of OLM. • Convergence and Partnership

Name of the Programme	Objectives	Implementation Strategy
DDU-GKY 	• Skill enhancement in various trades for the rural youth 18-35 years across the state through vocational training • Promotion of entrepreneur development programme through RSETI. • To create a cadre of skilled rural youth for better livelihood through assured job linked placement after successful completion of training.	• Implemented by ORMAS through empanelled Project Implementing Agency for different vocational training.

Name of the Programme	Objectives	Implementation Strategy
Rural Housing Schemes : **PMAY (G)** (Central Scheme) 	• To provide pucca house with basic amenities to all houseless and households learning in kutcha and dilapidated house in Rural areas.	• Work order is given to the beneficiaries as per the approved list of SECC 2011 beneficiary approved in the Grama Sabha • Unit cost of house Rs. 1.30 in IAP and Rs. 1.20 in non IAP District which will be given in 4 installments. • IHHL must be constructed in the house. • Convergence with MGNREGA and SBM

Name of the Programme	Objectives	Implementation Strategy
BPGY (State Scheme) 	• Destitute & homeless beneficiaries who have not received house in the PMAY (G) scheme through they are eligible to get house. • House Gutted people, Flood damaged affected beneficiary nodal nuxule affected beneficiary.	• Extra 95 days wage in IAY & 90 days in non IAY district employment is provided to a beneficiary. • Incentive is given for early impletion of house.

Name of the Programme	Objectives	Implementation Strategy
FCA (14th CFC & 4th SFC) 	• Show of tax revenue of State Govt. & Central Govt. to local bodies for self Governance. • Citizen centric basic civil services to the people of rural areas such as ✓ Drinking Water ✓ Street Lighting ✓ Creation of durable assets for income generation & maintenance of capital assets. • To create Adarsh Grama and Model GP.	• Planning Process through GPDP by approving the same through participatory process in the Grama Sabha as need based developmental works.

Name of the Programme	Objectives	Implementation Strategy
GGY 	• To provide additional developmental assistance to bridge the critical gaps in infrastructure in Rural Areas. • Supplementary existing resources with special focus on Bijli, Sadak & Pani in every village. • To attend need based demand of most populations village on priority basis in case of Bijli, Sadak & Pani.	• Implemented by Block on receipt of Action Plan approved by DPC of the district.

Name of the Programme	Objectives	Implementation Strategy
RURBAN 	• To stimulate local economic development in cluster approach. • Enhance basic services • Reduction of poverty & unemployment by stimulating local economic development. • Attracting investment in rural areas. • Development of Cluster villages with focus on equity and inclusiveness for urban life.	• Implemented by SPMU at state level and PD DRDA and BDOs of respective blocks by working out detail project reports of the clusters for various activities to be undertaken for economic development and social justice for the area and providing urban facilities in those clusters

Name of the Programme	Objectives	Implementation Strategy
RASHTRIYA GRAM SWARAJ ABHIYAN (RGSA) Central Share: 60 State Share: 40 TRAINING & CAPACITY BUILDING FOR STRENGTHENING PANCHAYATS	• Training and Capacity Building of Elected Representatives of 3-tier PRIs • Upgrading of Knowledge ,Skill and Attitude of PRI representatives & functionaries to better perform their responsibilities. • Creating infrastructure for CB related activities	• Implemented by SIRD&PR through Collaborative Partner Agencies and Empanelled Resource Persons

Digitalizing the Governance and Development Process through Panchayat Enterprise Suite and Scheme based MIS

MGNREGA	nrega.nic.in
PMAY (G)	rhreporting.nic.in
DDU-GKY	ddugky.gov.in
SBM	sbm.gov.in
FCA	Plan Plus ActionSoft PriaSoft NAD PFMS
DAY-NRLM	aajeevika.gov.in

All schemes are digitalized through MIS in the above system
(Source: State Institute of Rural Development & Panchayati Raj , Odisha)

4 INTRODUCTION TO NUAPATNA GP

4.1 Location and Regional Setting of Nuapatna GP

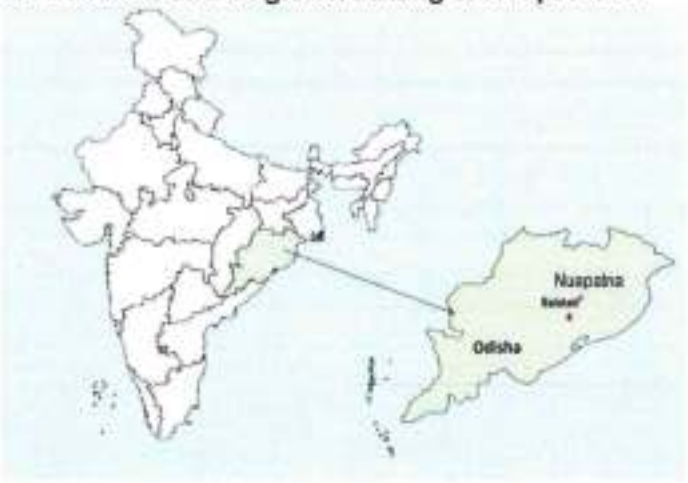


Fig 4.1- Map of India showing Location of Odisha and Nuapatna

State: ODISHA (21), District: CUTTACK (381), Sub-District: TIGIRIA(02949)/ Development Block: TIGIRIA(2949), Gram Panchayat: NUAPATNA (399027)

Civic Status: Census Town

Area: 2.7 Sqkm (Census 2011) Rainfall : 1377 mm Temp: 40/10

Total Population: 8057(As per Census 2011)

Geographical Location: Longitude 85°.27'08.9" E to 85°.28'40.4"E
Latitude 20°.26' 31.3"N to 20°.27' 19.4"N

Nuapatna , a census town in Tigiria Block of Cuttack district lies on State Highway 65. Bus facilities are available at Cuttack & Bhubaneswar to reach Nuapatna . Nuapatna is about 70KMs away from District Head Quarter i. e. Cuttack and 100KMs away from State Capital i. e. Bhubaneswar .Raj Athagarh & Ghantikhala are the nearest Railway stations . Nuapatna is a Panchayat having 5000 weavers with 2183 looms and is the main village of Tigiria Cluster. The total registered looms are 2083. There are 1350 weaving house hold with 7000 weavers population stay in the cluster. The art of weaving of Nuapatna Cluster is linked with Lord Jagannath since inception. Few weavers of this area weave special fabrics for the Lord Jagannath for different occasions. Nuapatna Cluster has prominence in the Indian Silk industry.

Fig 4.2- Satellite image of Nuapatna GP showing GP Boundary

Regional Connectivity to Tourist Circuit and Handicraft Circuit

Nuapatna handloom cluster comprises of Nuapatna G.P., Gadadharpur G.P., Bindhanima G.P. and Jemadeipur G.P. within 3 kms radius of Nuapatna village. Nuapatna Cluster had prominence in the Indian Silk Industry, as it was one of the 3 potential places of the Tussar Producing areas of the Country. Five exporters had established their organization at Nuapatna during the period from 1965 to 1995 for production and exports of Tussar and Tussar blended fabric like TGN to European Country, Japan. Due to change of policy and market trend at National and International Market, the production of Tussar product gradually reduced and the weaver of this area shifted to weaving of cotton & silk Tie & Dye sari for local & outside State Market.

Poet Jaydev of famous 'Geeta Govinda', an adorn devote of Lord Jaganath, in order to be with the close proximity of the deity had the verses of Geeta Govinda woven in tie and dye method on the cloth and offered to Lord. The ritual is still continuing at Jagannath temple, Puri and also interesting to note that Orissa sarees have a close relation with the Jaganath cult.

As per the estimation there are about 15500 weavers and 5860 looms in both the blocks. The prominent Gram panchayats are Nuapatna, Jemadeipur, Bindhanimaa and Gadadharpur Grama Panchayats of Tigiria block and Maniabandha, Abhimanapur, Kankadajodi, Ragadipada, Banamalipur of Badamba block.

Fig 4.3 – Handloom Cluster of Tigiria and Badamba Block

Badamba Patachitra Painting, Baranga Terracota, Bhatimunda Brass and Bell Metal,Bidanasi Woodwork and masks, Bundhanima Sholapith craft, Cuttack applique, Cuttack Brass and Bell Metal,Cuttack Horn and Bone, Cuttack Filigree,Cuttack Pottery and Claywork, Maniabandha Tie and Dye, Nuapatna Khandua handloom, Talabasta Cane and Bamboo, Trilochanpur Goldengrass, Narsinghpur Dhokra craft are very famous handicraft in the Cuttack district.

Nuapatna has good potential of being connected to this Tourist and Handicraft circuit which can be a handicraft cum tourist holiday tour(see Fig 4.4) lying on State Highway 65 , starting from:

1. Bhubaneswar- Capital Of Odisha
2. Cuttack- Old capital of Odisha with many handicrafts mentioned above
3. Ansupa Lake- Ecotourism Spot
4. Nuapatna- Handloom Centre
5. Maniabandha- Handloom Centre

6. Kantilo – Brass and Bell Metalwork

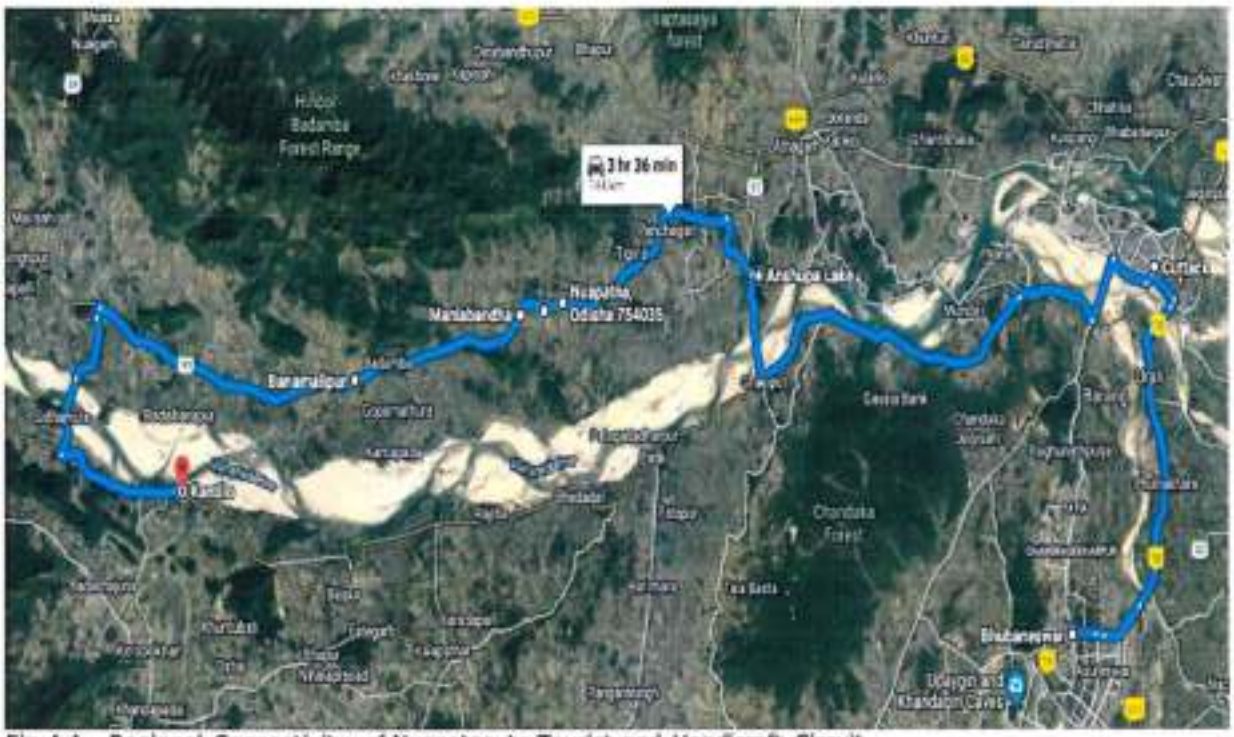


Fig 4.4 – Regional Connectivity of Nuapatna to Tourist and Handicraft Circuit

4.2 Background of Nuapatna

The tie & dye art of weaving of Nuapatana & Maniabandha area has been appreciated all over the country and abroad because of its exquisite work man ship design, colour combination and languishing craftsmanship. In the part handloom products of these area were great demand at the International market of Indonesia, Burma and other neighbouring countries. The art of weaving of these area are more than 800 years old and is linked with the Temple Lord Jagannath. The Silk, Tassar, Katia and Cotton products developed by the traditional weavers of Nuapatana area are acclaimed for their novelty, superb craftmanship ,high weaving qualities and development of eco-friendly vegetable dyes. The Nuapatana Cluster had prominence in the Indian silk Industry, as it was one of the three potential places of the Tassar production areas of the Country, after Champa in Chatisgarh and Bagalpur in Bihar. It was the major exporter center at Odisha for Tassar product like T.G.N. TG.TN during the period from 1965-1995.

Nuapatana & Maniabandha area of both Tigiria & Baramba Block are weaver dominated place where about 2000 weaving households accounting to approximately 10,000 weavers and 6000 looms. These place are well known in the District of Cuttack and provides gainful employment to ample number of weavers. The cluster deals with production of Sarees, Dhoties, Lungi, Scarf, Dress materials, furnishing on silk, tassar, cotton and their products are affordable by middle class. It has created an important place in Indian Handloom Industry for its Ikat style of handloom weaving. Nuapatana is the main handloom cluster of Athgarh Zone. Besides this

handloom activities are continuing in other following major handloom village of Athgarh and Banki Sub-division.

1. Nuapatana	6. Adheigundi
2. Maniabandha	7. Gamilo
3. Muktanagar	8. Tulasipur
4. Birabarpur	9. Ragadi
5. Abhimanpur	10. Jemadeipur

The main product of Nuapatana cluster is khandua silk saree . Khandua Saree is a Body BandhaSaree with Lions, Elephants and Flowers in a row. In general the saree would not be of pure silk as, cotton and polyester is mixed for the patterns on the border and on Anchal.
It is the cheapest Tie & Dye silk saree in comparision to Tie Dye saree of other areas. It is widely accepted by the common people of Odisha and West Bengal. Nuapatana is the centre for production of Tassar item like, Tassar Chadar, Tassar Shirting, Tassar Scarf. Besides this cotton Tie Dye saree of different count ranging from Rs.150/- to Rs.700/- are produced in other handloom villages, i.e Maniabandha, Muktanagar, Birabarpur, Adheigundi & Gamilo. Other product like tie & dye Lungi, Dress Materials both cotton & polyester, Tassar Scarf, Silk Joda, Cotton Dhoti, Gamucha, Art silk Saree, Polyester cotton saree are also produced in these villages.

Availability of other infrastructural facility at nuapatana handloom cluster.

One Co-operative spinning mill i.e Shree Jagannath Weaver's Co-operative Spinning Mill is functioning at Nuapatana since 20 years. One Reeling Centre of SERIFED is functioning at Nuapatana where one dyeing M/C is also functioning for the benefit of handloom weavers. One Branch of Banki Central Coop.Bank is functioning here for the benefit of Nuapatana Cluster. Besides this Cuttack Gramya Bank and S.B.I., U.B.I's Branch office are functioning here.

Khadi activity

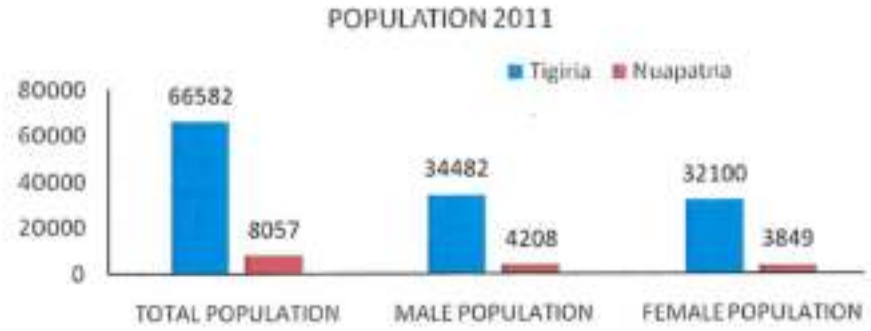
Several khadi unit are functioning at Nuapatana for production & marketing of khadi products – nilachala khadi production center, nuapatana is one of the leading khadi production unit of this area.

Gauze bandage production

Some private enterpreneurs of Nuapatana area are producing gauze bandage and supplying the same to different Hospital for their use.

4.3 Demographic Profile of Nuapatna

Fig 4.5 Demographic distribution of Male and female Population in Nuapatna versus Tigiria CD Block (Source: Census,2011)



Source: Cuttack DCHB 2011, Census of India

- Nuapatna population forms **12% of Tigiria block**
- Its sex ratio is **915** vs the blocks' 930

POPULATION	TOTAL POPULATION	MALE POPULATION	FEMALE POPULATION
Tigiria	66582	34482 (51.79%)	32100 (48.21%)
Nuapatna	8057	4208 (52.23%)	3849 (47.77%)

Table 4.1 Demographic distribution of Male and female Population in Nuapatna versus Tigiria CD Block (Source: Census,2011)

	TOTAL LITERATE POPULATION	MALE LITERATE POPULATION	FEMALE LITERATE POPULATION	LITERACY RATE
Tigiria	48598	27200	21398	81.7
Nuapatna	6094	3426	2668	85.53

Table 4.2 Demographic distribution of Male and female literate Population in Nuapatna versus Tigiria CD Block (Source: Census,2011)

Being the only census town of Tigiria block, the **literacy rate of Nuapatna at 85.53%** is much higher than the state average of 72.9 and block average of 81.7%

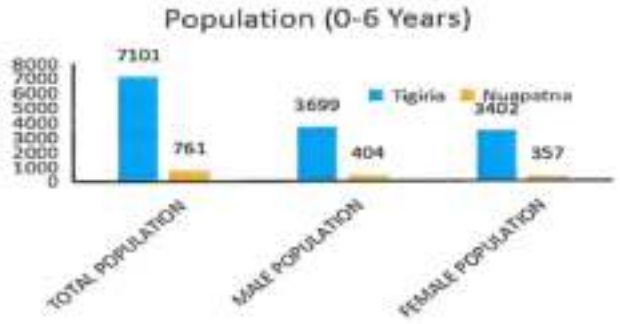


Fig 4.5 Demographic distribution of Male and female Population(0-6 years) in Nuapatna versus Tigiria CD Block (Source: Census,2011)

0-6 years population is 10.72 % of total population

Table 4.3- Demographic distribution of 0-6 years age male female population of Nuapatna versus Tigiria CD(Source: Census,2011)

POPULATION	TOTAL POPULATION (0-6 years)	MALE POPULATION (0-6 years)	FEMALE POPULATION (0-6 years)
Tigiria	7101	3699	3402
Nuapatna	761	404	357

Table 4.4- Demographic distribution of SC & ST population of Nuapatna versus Tigiria CD(Source: Census,2011)

POPULATION	TOTAL POPULATION	SC POPULATION	ST POPULATION
Tigiria	66582	9484	2397
Nuapatna	8057	349	165

SC population is 4.33% and ST population is 2.05% of total population

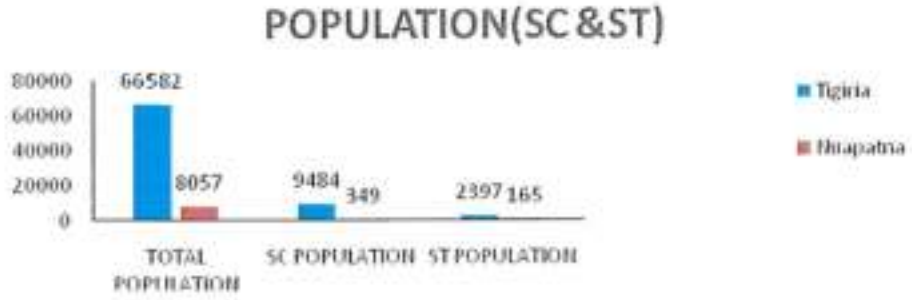
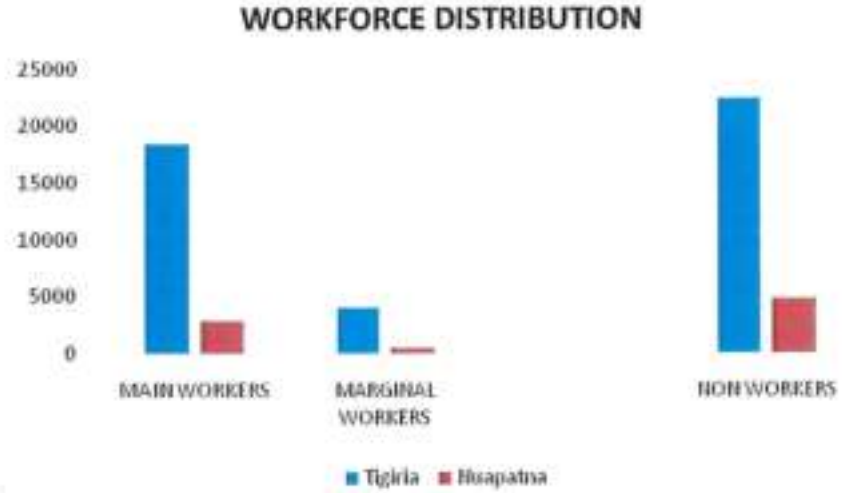


Fig 4.6 – Distribution of SC & ST in Nuapatna and Tigiria Block

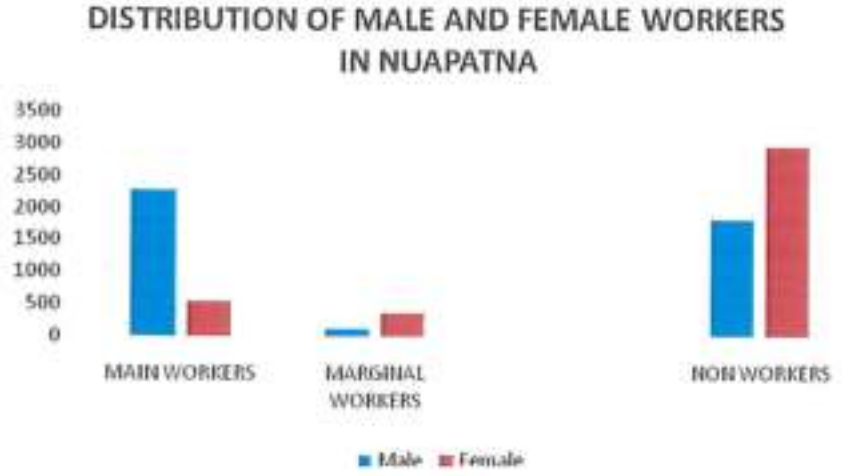
4.4 Economic Base and Occupational Distribution

Fig 4.7 -Workforce Distribution(Source: Census,2011)



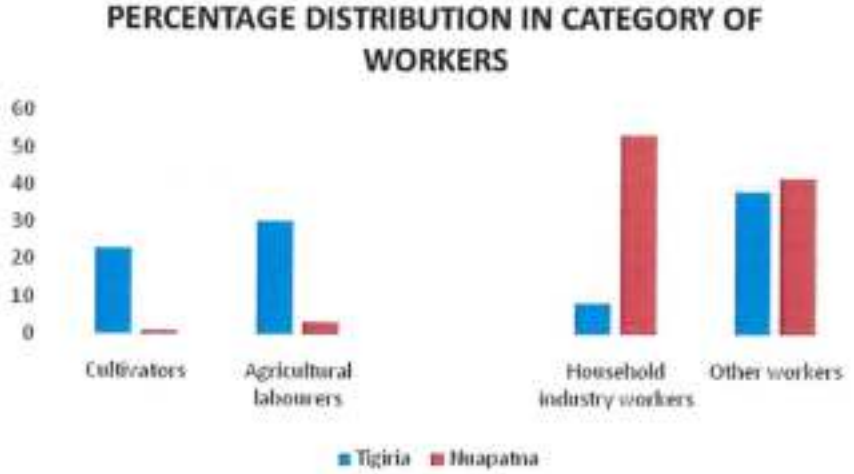
- Nuapatna main workforce forms **35% of total population**
- Nuapatna marginal workforce forms **5.8 % of total population**

Fig 4.8 -Workforce Distribution of Male and Female (Source: Census,2011)



- Nuapatna males forms **54.33 % of main work force**
- Nuapatna females forms **13.87 % of main work force**
- Nuapatna males forms **2.54 % of marginal work force**
- Nuapatna females forms **9.35 % of marginal work force**

Fig 4.9 -Workforce Distribution of Worker Categories (Source: Census,2011)



- Only **3.93% of the workers** are engaged as **Cultivators and agricultural Labour**
- Around **58.29% of the workers** are engaged in **Household industry-handloom weaving and 37% in others (Census 2011)**

Table 4.5-Percentage Distribution in workforce category(Source: Census,2011)

WORKFORCE DISTRIBUTION	MAIN WORKERS			MARGINAL WORKERS			NON WORKERS		
	%	MALE	FEMALE	%	MALE	FEMALE	%	MALE	FEMALE
Tigiria CD	27.61	16720	1663	5.97	2505	1468	66.42	15257	28969
Nuapatna	35	2286	534	5.8	107	360	59.2	1815	2955

- **Weaving is the main occupation in Nuapatna- 58.29% household industry plus 37% supporting activities**
- In Tigiria Block however agriculture is the main occupation(52%)

4.4.1 Findings

The GP is comparatively ahead of the Block in terms of literacy and economic base.

4.5 Natural Resources

4.5.1 Climate

Table 4.6-Climatic details

Table No 1.4 a: Details of Agro ecological system — **Name of the State : ODISHA**

Name of District : CUTTACK

Block	Agro Ecological Zone type	Type of Terrain	Block area (ha.)	Normal annual Rainfall (mm)	Average Monthly Rainfall (mm)	No. of Rainy days (No.)	Average weekly Temperature (°C)								
							Period								
							Summer (April-May)			Winter (Oct.-Mar.)			Rainy (June-Sept.)		
Cuttack sadar	East and south eastern costal plain	Plain	30797.5	1424.3	118.69	68.5	31.3	31.3	31.8	25.6	25.4	25.2	29	29	29
Baranga	East and south eastern costal plain	Plain	13061.78	1424.3	118.69	68.5	31.3	31.3	31.8	25.6	25.4	25.2	29	29	29
Kantapada	East and south eastern costal plain	Plain	12165.74	1424.3	118.69	68.5	31.3	31.3	31.8	25.6	25.4	25.2	29	29	29
Niali	East and south eastern costal plain	Plain	20953.47	1424.3	118.69	68.5	31.3	31.3	31.8	25.6	25.4	25.2	29	29	29
T.Choudwar	East and south eastern costal plain	Undulated	37817.52	1424.3	118.69	68.5	31.3	31.3	31.8	25.6	25.4	25.2	29	29	29
Salipur	East and south eastern costal plain	Plain	24667.32	1424.3	118.69	68.5	31.3	31.3	31.8	25.6	25.4	25.2	29	29	29
N.Kolli	East and south eastern costal plain	Plain	22751.62	1424.3	118.69	68.5	31.3	31.3	31.8	25.6	25.4	25.2	29	29	29
Mahanga	East and south eastern costal plain	Plain	20676.67	1424.3	118.69	68.5	31.3	31.3	31.8	25.6	25.4	25.2	29	29	29
Athagarh	Mid Central zone	Undulated	43321.65	1424.3	118.69	68.5	31.3	31.3	31.8	25.6	25.4	25.2	29	29	29
Tigiria	Mid Central zone	Undulated	11733.76	1424.3	118.69	68.5	31.3	31.3	31.8	25.6	25.4	25.2	29	29	29
Baramba	Mid Central zone	Undulated	40309.19	1424.3	118.69	68.5	31.3	31.3	31.8	25.6	25.4	25.2	29	29	29
N.S.pur	Mid Central zone	Undulated	64845.08	1424.3	118.69	68.5	31.3	31.3	31.8	25.6	25.4	25.2	29	29	29
Banki-I	East and south eastern costal plain	Undulated	20691.58	1424.3	118.69	68.5	31.3	31.3	31.8	25.6	25.4	25.2	29	29	29
Banki-II	East and south eastern costal plain	Undulated	29297.11	1424.3	118.69	68.5	31.3	31.3	31.8	25.6	25.4	25.2	29	29	29

4.5.2 Geo-morphology

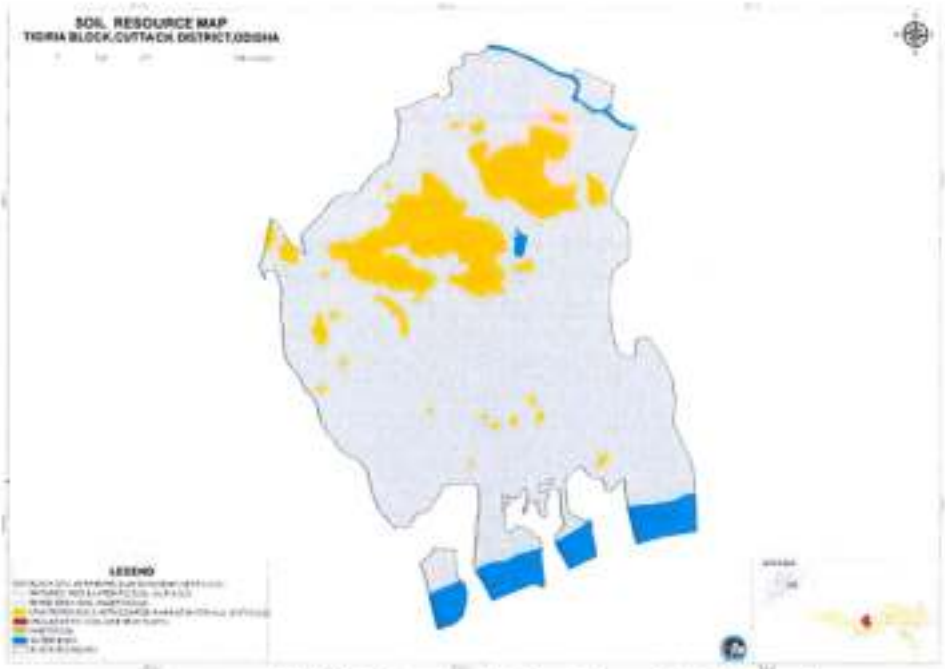


Fig 4.10 Geomorphology Map of Tigiria Block

Nuapatna has Mixed grey soil (inceptiols)-laterite alluvium

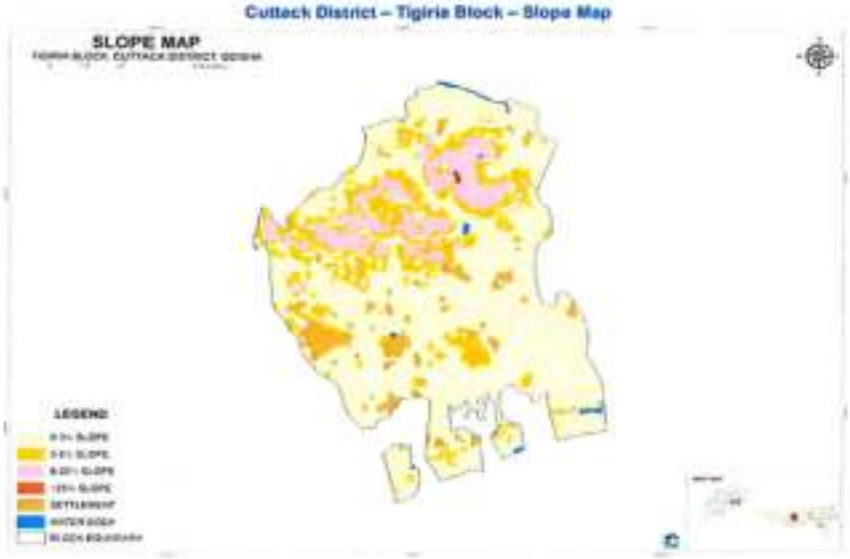


Fig 4.11 Slope Map of Tigiria Block

Nuapatna lies in the 3-8% slope zone.

4.5.3 Ground water resources and Potential

Table 4.7 Ground water availability Map (Source: Bhuvan)

Sl.No	Source	*Kharif*	*Rabi*	Total
1	Surface Irrigation			
(i)	Canal (Major & Medium Irrigation)	0	0	0
(ii)	Minor Irrigation tanks	937	207	1144
(iii)	Lift Irrigation / Diversion	408	244.8	652.8
(iv)	Various Water Bodies including Rain water harvesting	2	1	3
(v)	Treated Effluent Received from STP	0	0	0
(vi)	Untreated Effluent	0	0	0
(vi)	Perennial sources of water.	0	0	0
2	Ground Water			
(i)	Open Well	194	194	388
(ii)	Deep Tube Well	28	28	56
(iii)	Medium Tube Well	0	0	0

River, canal, drain network and water bodies in Tigiria

Sl. No	Focused Irrigation plan
1	Construction of Major Irrigation project (Rengali), MIPs & LIPs
2	Construction of lined and unlined field channels
3	Renovation of Minor Irrigation projects and LIPs
4	Construction of shallow tube wells
5	Installation of Micro Irrigation systems through Drips and Sprinkler
6	NRM activities through watershed approach and renovation of watershed structures
7	Creation of water bodies and WHS and renovation of existing structures

Fig 4.12 River canal and drainage Map of Tigiria Block

5 EXISTING ECONOMY AND LIVELIHOOD

5.1Handloom Cottage Industry at Nuapatna

The silk tie & dye weaving activities of this cluster dates back to 12th century when great poet"Jayadev" offered his Gitagovinda through the die and dye saris as stated above. Thomas Motte visited this cluster (Nuapatna) in 1766 AD and gave an account of weavers weaving silk tie and dye fabrics including Gitagovinda saris. The tie & dye technique in Nuapatna has reached a high level of development and craftsmanship during 20th century. In weaving of silk fabrics sometimes cotton yarn is used in border warp ikat and pallu weft ikat. The technique produces motifs in their natural curve form and geometrical motifs are very rarely used. The present practice of the tie & dye technique at Nuapatna is the outcome of the effort of one popular personality named Sri Arjun Subudhi and his son Banchhanidhi Das, who generously taught the art of tie & dye to interested weavers of this area. One school is established at Nuapatna in the name of Sri Arjun Subudhi.

There are 22 Primary WCS functioning in the cluster. Besides this 29nos. of Master weaver/Traders are doing their business activities in the cluster. Now 85 SHGs have also started their initiation to start weaving activities through their SHG. Some leading Primary WCS of this cluster are supplying cloth to BOYANIKA for its marketing. Besides this some Master weaver/traders are also supplying cloth to BOYANIKA/ Utkalika for its marketing through their show room. In return both Primary WCS and Master weaver are getting cloth dues and required yam both cotton & silk as per their indent.Besides this, Primary WCS as well as Master Weaver/ Traders and individual weaver are attending exhibition & expos crafts mela at different places throughout India for marketing of their product. Further the stake holder of this area also attending the buyers sellers meet at Bhubaneswar, workshop on Export Management, cluster development programme and also some stake holders have visited the Karur & Cannanore as exposure visit. They also actively participate for diversification of existing design to meet the demand of customers. Some master weave r/traders/SMEs have formed one consortium to develop the handloom industry of Nuapatna cluster.

Though weaving activities are continuing at Nuapatna since 12th century, after independent the 1st Primary WCS was established in the year 1948 after introduction of Co-operative Movement in the State. After establishment of Directorate of Textiles, Orissa at Bhubaneswar, massive steps was taken to organize cooperative societies by enrolling weavers as a member of the societies through thefield staff of ADT, Cuttack and Athgarh. The main object of forming cooperative societies is to provide full time work to the enrolled weavers and to provide marketing support for their product. Improved modernized looms with take up motion accessories like lobby, jacquard, and other attachment were supplied by the ADT, Cuttack/ Athgarh. Technical guidance was also provided by the qualified technical personnel of the department and by which new design fabrics with new technique was developed and hand loom fabrics were accepted by the different section of the State and outside Orissa. Due to introduction of different new welfare scheme, there are training programmes by the Directorate of Textiles, Orissa.

This is the only cluster in the state where more numbers of weaver, non-weavers attracted to accept the weaving trade as their profession to maintain their livelihood. Due to hand loom potentiality in Athgarh and Banki Sub-Division one Textiles zone was established at Athgarh in 1982 for better administration and technical guidance to hand loom weavers at Athgarh and Banki Sub-Division. Accordingly, 22nos. of Primary WCS have been registered in Nuapatna cluster. Besides this number of Master Weaver/ trader and SME are doing their handloom activities and exploring the market throughout the Country.For fulfilment of required yam of

individual weaver of Athgarh Zone and other Zone, one Cooperative Spinning Mill i.e. Sari Jagannath Co-operative Spinning Mill was set up during the year 1980. Due to skill of weavers of Nuapatna and availability of their infrastructural facilities, five exporters had established their organization at Nuapatna and were producing mainly Tussar blended fabrics i.e. TG, TGN, TGTN during the period 1965 to 1995.

But due to change of Govt. Policy and market trend of overseas the export market was gradually closed for those furnishing product. Main reasons are as follows:

- Change in the forest department policies for the Tussar cultivation by which it was decided to collect revenue towards production ofTussar cocoons as forest products.
- Shift/change in the trends of consumption
- The market of coarser count product like TGTN was gradually come down and demand for finer count product was increased.
- Ban of Indian Textiles Export to Germany on Eco-friendly grounds.
- Germany and other European Countries announced ban on the Indian Textiles Export during 1995-97 stating that they are not eco-friendly and some specific dyes used in our Country are creating skin cancer to some of its user.

Due to above reasons and to accommodate the different situations and to maintain their livelihood, the weavers of the cluster had diversified for weaving of low cost silk sari targeting the local and State and domestic markets. Middle class people generally refer to give cheaper variety of mulberry with Malda silk sari as gift to their relative, children during the auspicious occasion like marriage, birth day etc.

As on date 5% of the cluster population are in the tussar line while the remaining i. e. 95% of the weaver have taken up diversified single Ikat Tie & Dye mulberry Malda silk sari, cotton sari, dress and furnishing materials. Orissa State Handloom Development Corporation was es tablished with a view to providing forward & backward linkages to the unorganized individual weavers of the state. After closure of the said organization some of the master weavers of the cluster diverted the route of business towards other marketing channels and Boyanika. During last decade the co-op. societies become financially weak due to various factors and were unable to provide regular work to their total working members. Hence some of the individual members of the societies started their own business with Boyanika & other organizations &developed themselves as Master Weaver/ Entrepreneurs & accordingly the number of Master weavers/Entrepreneurs /Traders increased from 10 to 29.

Cluster Actors in Nuapatna Handloom cluster can broadly be divided into the following categories- Master Weavers, Weavers, tie and dyers and State/National awardees. Besides, one more cluster actor who plays very significant role is the trader who is only into marketing of the product and not necessarily having any weaving related skill. The cluster growth is primarily shared by the master weavers and the state and national awardees and the traders who have moved out of the state to seek for better markets for their exclusive products. The details of the cluster actors are as follows.

1. Master Weavers

Master weavers are the weavers who get the weaving done by contractual weavers by supplying raw materials, design brief and wage and sell the products through different marketing channels like shops, traders, BOYANIKA, Sambalpuri Vastralaya, Health Department, Khadi Gramodyoga organization. There are master weavers who control 1 to 10 to 50-150 looms. The holding of looms in the cluster is skewedly distributed. There are master weavers who have their own looms and in certain cases they have a centralised production system/ factory with 10 to 20 looms and hired contractual weavers to work there and producing different type of product like, cotton, silk sari, dress material, furnishing thana, Gauge bandage etc. and doing their marketing through different In other cases they only hire contractual weavers who work at their own loom in their houses. Sometimes also these master weaver traders are purchasing finished product from Primary WCS/ Individual weaver for its marketing within & outside the State. Most of the master weaver/ traders are the members of any Primary WCS of this area. But they are doing their own business by investing own capital or borrowing loan from nearby cooperative bank/nationalized bank. The general trend is that when weavers acquire sufficient skill and resource becomes master weaver.

2. Weavers

There is a mixed community of weavers from different castes. Generally the whole family involves in weaving and most of the preparatory works like bleaching, opening of yam, winding etc. are done by the women and children and weaving and tie and dye activities are done by men. Household having 2 or more than 2 looms, women also do weaving or help the male members doing weaving.The weavers of Nuapatna can be classified into the following categories.

a. **Entrepreneur Weaver**: These weavers buy their own yam, do weaving and sell products at local Haats, shops or to traders in the area. They constitute very small portion of the total weaving population in the cluster.

b. **Contractual Weavers**: These weavers generally work either for Master weavers or attached to any Cooperative and get wage for their weaving. It is difficult to categories weavers under private master weavers and under cooperative fold as in most of the households having more than one loom, it has been observed that the looms are attached to different sources to avoid risk of not getting wages on time. Most of the weavers are enrolled as members of the different Primary WCS and getting yarn for production of fabrics as per design and specification supplied by the concerned Primary WCS and in return the weaver are supplying finished products to the Primary WCS and getting their required wages as per approved costing. They are wage earners mainly because of two basic reasons- either they don't have access to working capital or they don't have skill. Some of the Contractual weavers in the area are organised into Self Help Groups. Again within this kind of weavers there are following categories.

Contractual weavers having tie and dye skill: Tie and dye yams can be divided into two types based on required skill. One is "Border and Anchal" tie and dye and the 'Other one is

" body" tie and dye. The 1st category of tie and dye requires better skill than the 2nd and hence done by exclusive tie and dyers who are highly skilled in this technique. The body tie and dye is generally done by the contractual weavers itself. Those contractual weavers who know these body tie and dye earn better wage than the weavers who unskilled in this.

Contractual Weavers without tie and dye skill: This category of weavers are the weavers badly affected by poverty. They generally do not have access to working capital and high end skill. At times, they unable to earn an income which is sufficient to sustain their livelihood. Poor living standards are reflected in poor housing conditions, poor health, low social status, have no say in community based decision making processes and are excluded from representative bodies and inability to ensure proper schooling to their children. The problems faced by the weaver community include dependence on master weavers, middlemen and traders for generating demands andin determination of the wages.

3. **Tie and Dyers**

There are around 464 exclusive tie and dyers in the cluster. These tie and dyers mainly produces Anchal and Border tie and dye which requires more skill. Few years back tie and dye was not very pronounced but gradually people have acquired the skill and day by day the number of tie and dyers are increasing. Most of tie and dyers are doing single ikat and enlarged motifs. They are better off than contractual weavers and E weavers, they have an income substantially lower than master weavers despite possessing similar level of skills as they do not have the financial resources which allow them to subcontract production. 04 nos. of Dyers are working in the village who are engaged in dyeing of yam for the weavers and master traders as per their requirement of sheds. They have some specific charges for dyeing of yam on weight basis.

4. **National and State Awardees**

There are Master weavers who have specialised in producing high end products of exquisite artistries are recognised by the Sate and Central government. These weavers are the main drivers of innovation in the area of designs and colours and have been able to nurture market linkages outside the state due to their participations in the various fairs and exhibitions sponsored by the State/ Central government and thus ensure links with upper marketing channels. They generally don' t have large production base and depend highly on Government sponsored programmes. Besides, some awardees work like master weavers and have their own channels

Other supporting occupations are

5. **Yarn Traders:**

In the cluster 5 nos. of traders concerning to Handloom activities are there who are trading the yam and also purchasing the finished products from the weavers for marketing.

6. Post Weaving Processors (Basani):

After coming out of the products from the loom, these require to be finished for better feeling and looking and attract the consumers. This process involves a little care for giving sizing material on the fabric except the pallu and border by stretching tightly length and width direction and rubbing with the help of a soft cloth. Then wrap round a wooden beam and left for drying under sun light.

7. Loom and Accessories supplier;

The basic needs for weaving of fabrics on handloom are loom, weaving accessories like Heald, reed, shuttles, different varieties of cotton/Nylon cords for tying up of healds, making of healds, jalla making and other auxiliary purpose and designing devices such as <lobby. But the other designing machine like jacquard and its auxiliary accessories are generally purchased either from Varanasi or Calcutta.

8. Traders:

09 nos. of Entrepreneurs existing in the village who have factory type loom sheds of their own as well as independent weavers are extending their services by way of supplying the raw materials, design, colour scheme, etc. to the weavers and receiving back the finished products (sari) on payment of conversion charges. They have developed contacts with the traders of the village and other cities of the State/Outside State for selling out the products.

PRODUCTION PROCESS

Fig 5.1 Production Process

Production process

Washing Of The Yarn

The yarn is 'Malda Yarn' bought from the market and before it can be used to process it into a fabric it has to be washed. The fibers are soaked in lukewarm water (or preferably cooler water) containing detergent and left for about an hour. Following that the water from the sink is drained out and the hanks, one at a time, are rinsed with utmost care to wash off the soap. It is then gently pressed to ooze out the water. The yarn is left to dry out on drying racks. The hanging action helps the yarn dry straight.

Tying

Tying is the process where a plastic is wrapped around the yarn with the help of rubber. It is tightly tied as per the design so that those areas stay as it is without being stained while the process of dyeing is carried out. The frame is about 6'x4' and the artisan sits on the floor and ties. Since it is an intricate process it requires a lot of light and therefore natural light is preferred at a convenient level. Tying is done in their verandah or in the room attached to the verandah that has openings.

Dyeing

Dyeing is the application of dyes or pigments on textile materials with the objective of achieving colour with desired fastness. Dyeing is normally done in a special solution containing dyes and particular chemical materials. Yarn dyeing is used to create interesting checks, stripes, and plaids with different-colored yarns in the weaving process. In yarn dyeing, dyestuff penetrates the fibers in the core of the yarn. Cotton is dyed with a range of dye types, including vat dyes or is naturally extracted from plants and heated to give the colour permanence. In order to create a stronger pigment or a more permanent colour for the fabric, the pigment is heated in the room and the process releases gas. This gas needs vent to escape from the room in order to avoid suffocation.

Winding

Winding is the procedure where the hank is transformed to a linear form, the warp. Dyed hank yarn is wound on to pirn with the help of charkha. The pirn is used to load yarn into the warping drum. There is a wheel and a metallic shaft, which are connected with each other with the help of rope for transferring motion. The hank is mounted on the wheel and the pirn on the shaft. The yarn from the hank is transferred on to the pirn by rotating the wheel.

This process can be carried out in a much smaller space. Each charkha requires a minimum space of 5'x 2' and the total area would be approximately 6'x 4' which will allow the artisan to comfortably wind the yarn into the pirn. In the artisans' language the pirn is called the 'nalli' and the holder is called the 'manku'. The artisans of Nuaptna wind in the verandah because the space allows easy hand movement.

Warping

Warping is a process, which converts the hank yarn into a linear form to give the length on the loom. Warping is done on a huge drum and the width and desired quality of the product is decided at this stage. The drum also helps to calculate number of threads and the length of the warp. These threads form the base for the weft. For a 46 inch wide fabric, over 3200 individual yarns run along the warp of the fabric. The process of warping is carried out in a room having an

area of about 20' X 16'. The room has a puncture given in the roof through which natural light penetrates. The process requires one person to rotate the drum and another to help. The hank yarns of the desired colors are set in a frame of rows from which the thread is drawn and takes about a space of 12' in length and 9' in height.

Sizing

After warping is done, the warp is stretched out and sizing material is applied to add strength to the yarn and lubricate it to withstand the rigors of weaving. Natural adhesives like rice, maize, wheat flour or potato starch are used. This activity of starching the yarn for weaving is known as "sizing". This starch in the yarn is removed only after two to three washes of the woven product. The Nuapatna cluster follows a method called 'street sizing'. This requires a huge open area of about 200m. Typically, depending on the warp length, three to four persons are needed to carry out sizing. The open area provided in the design must be 6' wide and 300m long. In this way it will allow any length to fit in.

Weaving

Weaving is the process of interlacing two sets of yarn—the warp [the longitudinal threads] and the weft [the horizontal threads]. The equipment that facilitates this interlacement is the loom. A handloom is a loom that is used to weave fabrics using the hand and feet. This finally produces the beautiful fabric. Weaving produces an average of six pieces of fabric a month, each piece measuring a length of 5m.Pit loom, stand loom & frame loom are three kinds of looms used by weavers. The Pit loom is a loom that has a pit having two peddles set in the pit for the weaver to operate. This is considered to be better weaving as the fabric woven retains the character of the fibre and fabric due to the proximity to the ground. The ground absorbs the tension and speed and makes the fabric more breathable.

Fig 5.2 Housing Plan of the weavers

Problems of Handloom cluster

1. **Production related**

a) Limitations to export potential – Uniform design and shade in greater lots is difficult because of peg warping. Some research work is on in Institute of textile Technology at Choudwar to eradicate this problem.

b) Colour bleeding is a common problem. A research and Development cell is inevitable for updation of each of the stages involved in production of tie and dye fabric.

c) Colour matching is the greatest problem in tie and dye industry. In this technique when any tied material is dyed a desired portion of material is reserved from dyeing. But the weight of exact portion to be dyed and exact portion to be reserved are not found out in this traditional process thereby leading to an undesired shade and losses of dye stuffs. Colour matching or desired shade percentage can be achieved only when the weight of material to be dyed deducting the weight of material not to be dyed is exactly known.Recently an automatic mechanized model has been developed to calculate the weight of material to be dyed and not to be dyed in the Ikat process on sample basis. This kind of technology can help get rid out of the problem. The R & D cell can be established in consultation with some of the experts and the cell can look after the following points for cost reduction of Ikat fabrics and value addition in different methods.Introduction of automatic winders upto sub-grouping process for both warp and weft Ikat fabrics which will reduce the labour cost by 20%

- Develop ment of mechanical tying system for bold and geometrical designs
- Development of tie and dye fabrics shade cards.
- Application of softeners, easy care finishes like anti-crease, wash and wear and durable press finishes on ikat dress materials (specially for cotton).
- Application of small size winch dyeing machines for ikat materials
- Application of CAD system for design development

The most suitable eco-friendly reactive-friendly reactive-dye-stuffs is not applied on cotton Ikat fabric due to its bleeding nature. The technology of production of tie-dye fabrics should be generalized from a limited no. of skilled weavers. Any reputed designers should study process involved in the tie-dye technique and grouping particulars of designs before preparation of the Colour or shade .Variation of a particular design in different batch is the greatest problem of the cluster, which deviates the quality norms. However, it is a positive sign that these fabrics are till date not produced commercially in power loom.

2. **Raw material Procurement**

Following are the raw materials generally used in the cluster.

- Cotton yarn ranging from 40s NE to 80s NE single and 2/80s NE to 2/120s NE mercerized cotton.

- Mulberry silk, organzine 16/18 denier to 20/22 denier charakha of same count 2ply, 3 ply.
- Malda (wild silk) of West Bengal and Bihar origin only charakha.
- Tussar of Orissa and Bhagalpur
- Natural dyes, synthetic dyes (eco-friendly) i.e. like Vat, reactive, metal complex etc without carcinogenic effects.
- Eco-friendly chemicals for every process like desizing, scouring, bleaching, dyeing, degumming etc.

Some of the technical inputs are available in the cluster through traders, middleman, local haats at higher prices. All spinning mills in Orissa including Sri Jagannath Spinning Mills at Nuapatna are closed. So the cotton yams are procured from outside the State especially from south. The weavers of the area got cotton yam at a higher price. For silk also, the cluster depends upon West Bengal and Kamataka. There is no clear and transparent channel for procurement and distribution of silk and tassar yarn to weavers. The job is done now by the middleman and local trader. There is a price difference of Rs.200 to Rs.300 per Kg. of material. Dyes and chemicals available also in the local market are not qualitative.

3. Product Range

The main product of Nuapatna cluster is Tie dye silk Sari (Khandua). Besides this other product of the cluster are, Cotton & Plain Tie & Dye Sari, dress materials, furnishing, Gauge bandage, calligraphy, Bomkai silk sari, Tussar shirting, Joda & Sari, Cotton Lungi, dhoti and Napkin. The range of product (silk sari) is in between Rs.900 to Rs.2700, whereas cotton sari range is in between Rs.150 to Rs.550. Similarly dress material range varies from Rs.250 per set to Rs.1500 per set. They use Bangalore silk yam for warp and Malda silk yarn for weft purpose. Now finest Khandua Saree in 2 x 2 ply Bangalore mulbery organzine silk production has started taking place.

The design development process like paper design - Selection of fabric set - Enlargement of the design on tying frame (mental memory) - tying of gaps - Dyeing - untying unwinding weaving are non scientifically defined thereby having less control over the uniformity and clarity of designs when produced in different or even some batch.

Most of the reputed designers/Artists coming from design institute are not having basic idea about the core-content of yarn ikat technique prevailed in the cluster since 12th century or before more. The designers should have idea about the basic factors responsible for fluctuation of a design characteristics during manufacturing process like I) Count of yarn , ii) Ends and picks/ inch, iii) No. of ends or picks in a sub group during winding iv) No. of ends/picks in group in the tying frame, v) No. of groups in the tying frame etc.

Therefore most of the designs provided by reputed designer from NIFT, NID or any freelance origin are not accommodative with the skill, capacity and limitation of tie dye manufacture process and the designs are fluctuated on fabric. Since it is a special process the paper design meant for printing, Jalla or Jacquard M/c may not be suitable to Ikat Industry.

Hence the designers should be adopted in a long term and continuous basis at least for three months to six months in which, a designer will have time to study visualise the stages of each process during development of ikat designs starting from winding works to weaving at loom stage and the parameters stated above influencing the design characteristics. Subsequently the designer should consider the grey areas which fluctuates the desired, colour, style and shape of the original pattern and plan accordingly evolve an accurate pattern. The designs produced now are enough and meets the need of Indian domestic market but at a marginal distance from export market.

4. Finance

At present due to sharp fall in liquidity position of WCS, the weavers under co-operative fold of the cluster are unable to get regular work and diverted towards master weavers. The main funding agency for working capital is Banki Central Co.op. Bank, Nuapatna and UCO Bank Tigiria etc. are present in the cluster. Major of the working capital have been provided from B.C.C.B., Nuapatna. Working capital is the pivot which runs the business and maintains the livelihood of the weavers. The additional inputs like, training skill upgradation, innovation of new designs, market research etc. can only be effective when all the looms are running effectively. But due to various reasons, the working capital liquidity of the cluster is very poor. In general availability of credit is never an issue in the cluster. Banks, particularly the centralized banks are proactive in lending loans to all categories of weavers. But the cluster has history of bad repayment, which is mainly due to the fact that most of the credit particularly by the Contractual weavers are used for consumption purpose and not used for any productive purpose. The problem is acute in the case of weavers who are in cooperative fold. This problem is mainly due to the following reasons.

- The desire to ' push ' credit (by organizations) has mainly resulted in delinquency . There are some cases, where, without adequate preparation, groups and members have been given loans - lack of training to inculcate credit discipline and also manage IGAs, have subsequentl):' led to repayment problems.
- Lack of proper loan monitoring and follow-up by the field workers , due to the absence of an appropriate MIS, is also a key factor that has led to low repayments in some groups.
- No on-time tracking of default loans
- No action (or action without effect) taken by organizations in the light of previous delinquency problems, has prompted non-repayment in a few other cases - this aspect pertains to the contagious nature of delinquency.
- Improper Loan Appraisal Lack of Peer Pressure
- Lack of Cohesiveness of SHGs
- Lack of Belief in Continuity of Services (Repeat Services

5. Marketing

The products of the cluster are marketed in local hat, fairs/exhibition, through local traders, Apex

societies, Traders of outside State. The main marketing places are Cuttack, Puri, Bhubaneswar, Rourkela, Kolkata, and Delhi. The Apex WCS is lifting the products of the cluster and selling the product in their own depot functioning throughout India. The Primary WCS and some SME are attending different exhibitions, expo, conducted every year both inside and outside the State. Besides this some weavers are also selling their product through different craft mela organized by the D.C. Handloom in different places in different occasions.

Apart from this recent big buyers include Fabindia and Boyanika who provides much needed strength to the cluster and weavers in the form of organized buyers of the product produced under the cluster. The cluster make sure that the weavers are not exploited in any case whatsoever.

There is a good domestic marketing structure of the cluster with a turnover of 894.90 lakhs involving local hats, Fairs/Exhibitions/N.H.Expo. Local traders Apex WCS, Traders from outside State etc.

Though there is a good marketing infrastructure, there is no systematic management of the infrastructure and no inter relationship between different points. The cluster has no direct link with international market. Present structure needs: Market survey and research unit involving quantitative, qualitative, fashion design, style and choice factors.

Though there are many steps taken by textile department but not much result has been achieved in terms of establishing sustainable market linkages with high end market. The products are only suitable for domestic consumption inside India. A planning unit should be evolved with the feedback from market survey unit. There is also a need of forming structured system to get market feedback for different products and designs and dissemination of the feed back to the weavers.

6. Support Institutions

Reeling & spinning centre (Central Silk Board)

This Centre existing in the cluster produces silk yarn and selling to the weaver . Apart from this, Machine Dyeing Chamber has been installed by the center for silk Dyeing. Dyeing of weft is not possible in this machine, because the weft silk yarn is involved in a cumbersome procedure of Tie and dye yarn preparation in different colours.

The Weavers Service Centre (WSC)Bhubaneswar

The Weavers Service Centre (WSC), the state representative of the office of DC (Handlooms) Government of India, is based at Bhubaneshwar and has the jurisdiction over the entire state. WSC has carried out a number of training programmes on design, technology in the cluster in the past. The WSC also provides marketing support to handloom weavers through the various marketing events across the country in which the state' s participation is coordinated by WSC.

Asst. Director of Textiles

This Office looks after both administrative and Technical sides of different W.C.S.(s)functioning in the Cluster and guide the weavers for taking up new range of products with modern designs and colours as per the market demand. The Govt. schemes /projects are being

implemented through the W.C.S. for increasing wage earning of the weavers and marketing related.

State Handloom Cluster Development Cell, Nuapatna

This cluster cell has been established on 01.08.2008 as per the scheme guide lines of the State Cluster Development Program for Nuapatna. At present the cell is functioning with 5 resource persons, including the Cluster Development Executive (COE), Nuapatna. The cell has conducted base line survey and started its activities as per approved activity plan of the scheme.

BOYANIKA, Bhubaneswar:.

It extends marketing support to some extent, but not like past years due to several reasons.

Recently one D.E.P.M. Project is under implementation for trial sample production of different variety of fabrics other than the present varieties.

Tussar Silk Udpadak Sangha (KVIB)

This also extends sustained work to weavers by supplying raw materials and conversion charges for production of different range of fabrics like Sari, Dress materials, etc.

7. Infrastructure Requirement

The existing infrastructures and some recent steps taken by textile department to improve the existing ones are as follows. One dyeing unit and one sales centre have been provided under Govt. schemes to 04 nos. of W.C.S. of the area. But except one, others are not functioning properly. Presently, in absence of the dyeing un its at societies' level, the weavers are doing their own dyeing at their cottages or through the dyers existing in the village for which many times the desired shade is not coming out. Funds for 4 nos. of quality dying units were sanctioned and the scheme was under implementation. The training programme for dyeing activities were to be conducted by WSC, Bhubaneswar. When the funds meant for that was surrendered to DCH, New Delhi as per instruction of DTO, Bhubaneswar during 2002 and the units were defunct. One of these four units i.e. Nuapatna No.2 WCS is taking up dyeing activities successfully due to available personals trained in dyeing by WSC and other organisations since long. Hence for other units feedback like trainings, technical inputs etc.are required.

Sales centres were established in the village but are not getting good sales because of the lack of expertise of the sales men and their exposure to outside market. They also lack selling skill.

It is also felt necessary to think about bleeding of colours of silk products of pallu. This is due to the reason that the weavers are habituated to dye the pallu portion of the warp with Naphthol dyes while weaving on loom instead of acid dyes which is not stable to wash. All consumers are not getting dry cleaning facilities. So before purchasing a silk sari, the consumer has to think about this side. It can be overcome by way of introducing dyeing of body and pallu separately at the warping stage which may reduce the no. of pieces taken for weaving at a time.As a common infrastructure like "**Designing and Market research center**" is necessary to be set up at the cluster which will supplying the paper designs to the weaver with colour scheme for some specific variety of fabrics which have market demand.In light of the ever changing market

choice, this center will act as the exposure to the weaver to produce fabrics accordingly. The weavers need to be motivated in different workshops to do their job with little sincerity & responsibility for maintenance of the quality. There is a stated need for Centralized **Training design development centre (national and international level)** for the cluster.

To ensure market potential, Institutional finance, weavers education and welfare, availability of raw materials and continuous employment; following scheme/ projects are taken up by the Government so far.

i) Organization of weavers Cooperative to bring the weavers under organized sector.
ii) Arrangement of working capital from NABARD.
iii) Internal and External Infrastructure for marketing.
iv) Introduction of New Designs and product diversification programme linked to consumer demands.
v) Up-gradation of technology by supplying improved looms and accessories for higher productivity and wage earnings.
vi) Favourable Handloom policies and Reservation Act to Safeguard the industry from cut-throat competition from Mills/ Powerlooms Sector.
vii) Establishment of Cooperative spinning Mills for adequate supply of row materials.
viii) Provision of marketing Incentive under Deen Dayal Hatkargha protshahan Yojana.
ix) Implementation of Deen Dayal Hasthakargha Protsahana Yojana.
x) Provision of Margin Money assistance for weavers as well as investment of shares by Govt. in weavers cooperative under D.D.H.P.Y.
xi) Implementation of National Design Collection Scheme and organization of decentralized training programme on design, colour and defect-free weaving.
xii) Organization of Handloom Expos/Exhibitions.
xiii) Introduction of welfare schemes to provide social security of the weavers.
xiv) Setting up of Handloom Development Centre / Quality Dyeing Unit for quality products.
xv) Assistances to loomless Weavers under S.G.S.Y. through Blocks.
xvi) Provision of fire proof worksheds for weavers.
xvii) Implementation of special project package schemes (P.P.S.) Integrated Handloom village Development programmes for socio-economic up-lift-ment of Handloom weavers and discontinued.
xviii) Implementation of Health Package Scheme.
xix) Implementation of Integrated Handloom training project for upgradation of weavers on design dyeing and weaving.

Spaces needed

- Information and Interpretation Centre
- Revival of Jagannath Spinning Mill
- Raw material Godown and Weavers Service Centre
- CFC for demonstration and adaptation of technology, export facilitation
- Permanent Showroom
- Training design development centre (national and international level)

- Designing and Market research center

5.2 Agriculture

Most of the farmers are marginal farmers (having land 0-2.5 acres).Most of the land is rainfed. Paddy is kharif crop. Rabi crops are Moong dal and vegetables. Nuapatna has the largest mandi (haat) in the block and caters to Jemadeipur and Bhagoda GP. Gadadharpur and Banamalipur are high in vegetable production.The paddy production is 25-30 quintal per acre. Only 2 hectares of land under paddy production.

5.3 Livestock

Livestock are mainly for milk production. There are 417 cattle besides sheep and goat. Poultry are mainly kept in the backyard.Livestock aid centre is there.

5.4 Availability of Assets among the household

Table 5.1 Availability of Assets among the household(Source:Census 2011)

Availability of assets											
Radio/ Transistor	Television	Computer/Laptop		Telephone/Mobile Phone			Bicycle	Scooter/ Motorcycle/Moped	Car/ Jeep/Van	Households with TV, Computer/Laptop, Telephone/mobile phone and Scooter/ Car	None of the assets specified
		With Internet	Without Internet	Landline only	Mobile only	Both					
12	46.7	1.2	1.8	1.8	44.6	2.1	65.2	16.4	1.2	1.6	19.7
12	46.7	1.2	1.8	1.8	44.6	2.1	65.2	16.4	1.2	1.6	19.7

It appears that the residents enjoy a good standard of living compared to other GPs.

6 CURRENT SPATIAL ANALYSIS

6.1 Existing Land Use Plan

Nuapatna , a census town in Tigiria Block of Cuttack district lies on State Highway 65. Bus facilities are available at Cuttack & Bhubaneswar to reach Nuapatna . Nuapatna is about 70KMs away from District Head Quarter i. e. Cuttack and 100KMs away from State Capital i. e. Bhubaneswar ,Raj Athagarh & Ghantikhala are the nearest Railway stations . Nuapatna is a Panchayat having 5000 weavers with 2183 looms and is the main village of Tigiria Cluster.

The current landuse map shows the GP on both sides of the State Highway 65. There is a line of commercial use on both sides of the highway indicated by dark blue.

Most of the GP area is on the northern part of the State Highway 65. On either side of Canal are agricultural lands. There are some low lying areas which are water bodies as shown in light blue in the southern part of the GP like the Bada Pokhari and Budugadia Pond.

The areas marked in red are Public and semi-public areas which house the educational and health institutions, Private and Government offices(like Police stations, Panchayat Office) and other socio cultural amenities like the Village Haat. The schools and anganwadis are distributed across the residential lots.

The industrial area is on the north which houses the Jagannath Spinning mill and ancillary structures. There are reserved forests in the north and south. It is indicated by dark green. There are several open areas but they are not developed for playground and recreational activity.There are fallow vacant land on either side of the Jagannath Spinning Mill. The Spinning Mill was inaugurated in 1984 by Late Prime Minister Indira Gandhi but has been closed down since 2005 due to financial problems. It had laid off 1000 employees who were working there.

The Fig 6.1 shows the current land use map which has been obtained by overlaying the RI Tehsil map with current uses .

The weavers were given the land on lease by the government (to the left of the Jagannath Spinning mill) which is shown in yellow for their home based enterprises. The original settlement was to the south of the GP (south of the State Highway 65).

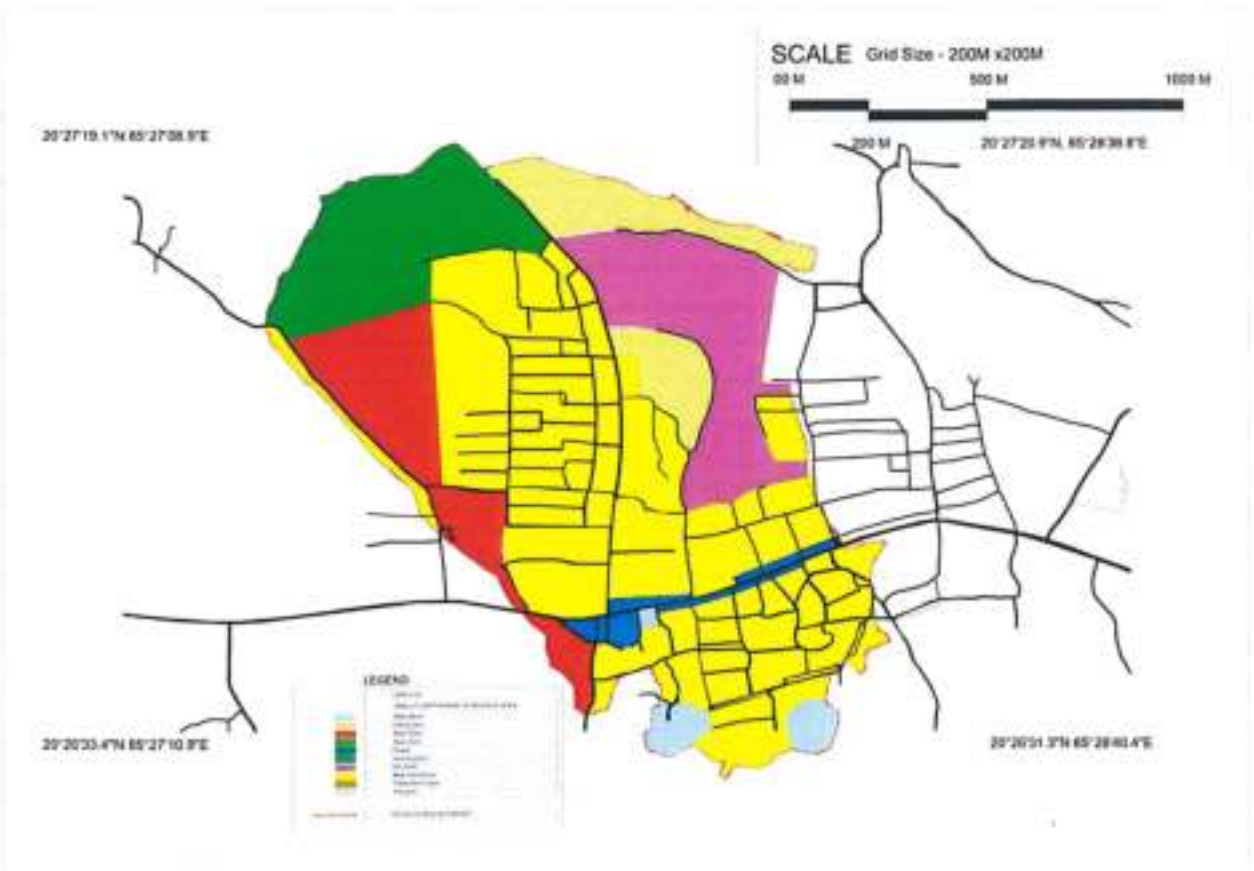


Fig – 6.1 Existing land use map which has been obtained by overlaying the RI Tehsil map with current uses (Source: Primary)

6.2 Existing Built use Plan

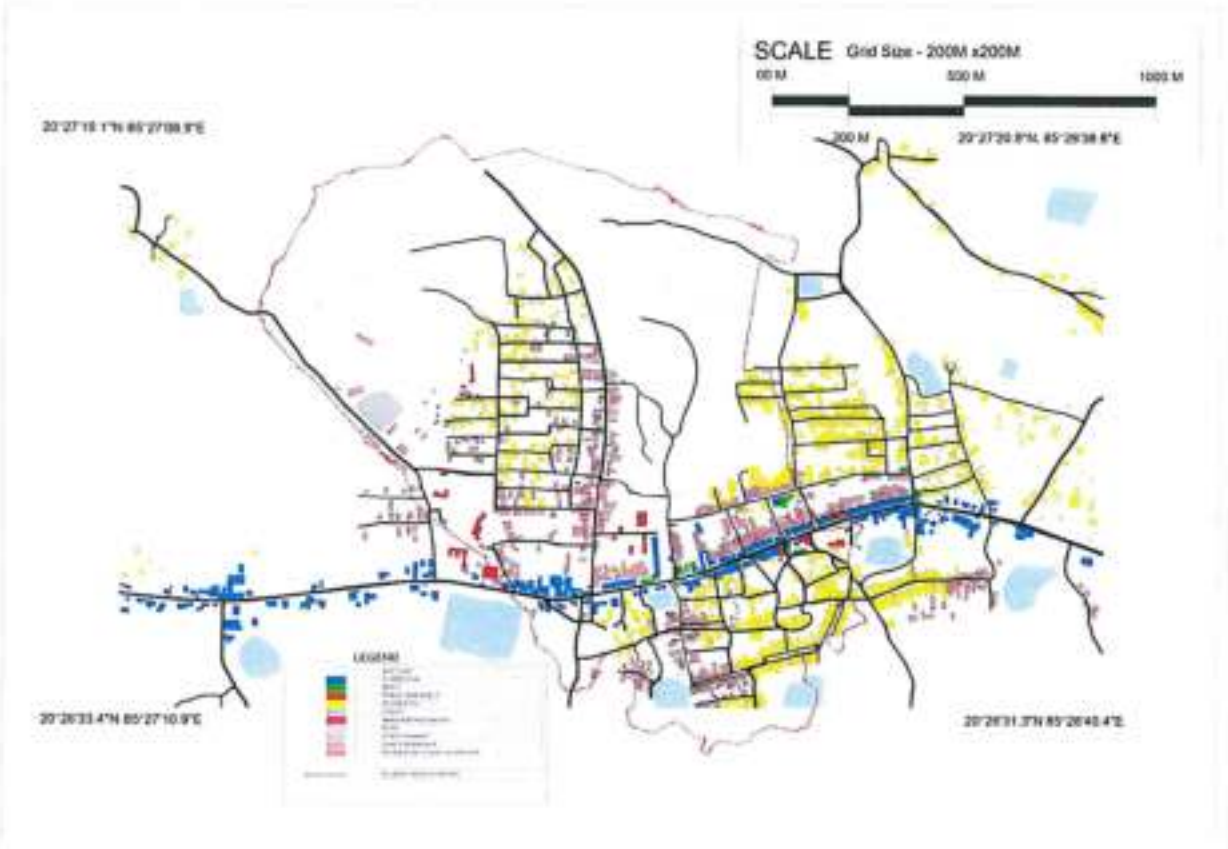


Fig 6.2 Existing Built Use Map

LEGEND

- BUILT-USE
- COMMERCIAL
- MIXED
- PUBLIC SEMI PUBLIC
- RESIDENTIAL
- UTILITY
- ABADI AREA BOUNDARY
- ROAD
- STATE HIGHWAY
- CRAFT WORKSHOP
- RESIDENTIAL + CRAFT WORKSHOP

A look at Fig 6.2 showing the existing built use map shows that the residential settlement indicated by yellow is densely placed along the older areas to the south of the State Highway . The leased plots to the north of the State Highway 65 are long and linear too but not as dense as the older settlement to the south.The craft workshops are indcated in light pink and the residential cum workshops are shown in darker pink.

The blue areas indicating the commercial development is along the State Highway 65. There are several ponds as can be seen by light blue. The green shows mixed use development(residential plus commercial). Grey areas are utility areas. State Highway 65 has been shown in dark grey.

The areas marked in red are Public and semi-public areas which house the educational and health institutions, Private and Government offices(like Police stations, Panchayat Office) and other socio cultural amenities. The schools and anganwadis are distributed across the residential lots.

Fig 6.3 shows the distribution of various built uses is:

1. Residential-50%
2. Public Semi Public-5%
3. Mixed use-1%
4. Commercial-10%
5. Residential +Craft-26%
6. Craft- 6%
7. Utility- 2%

6.3 Growth Stages and Direction

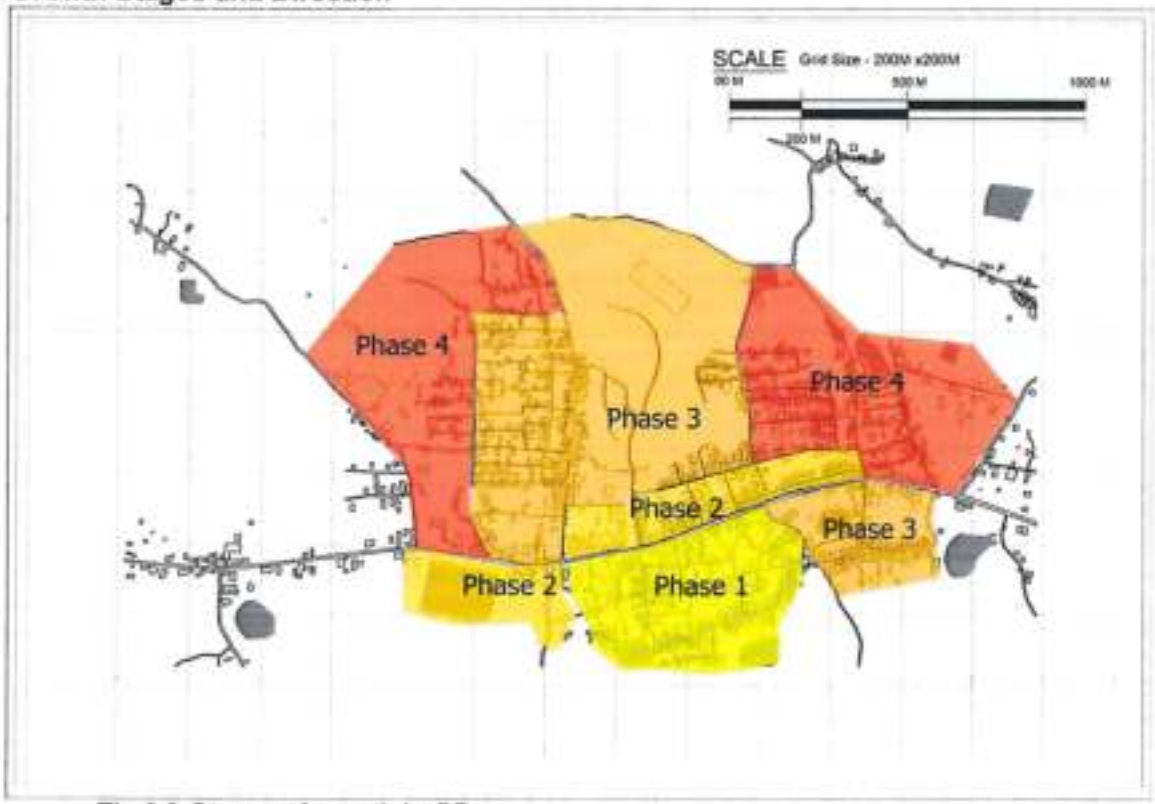


Fig 6.3 Stages of growth in GP

The first phase of growth happened in the southern part of the GP as indicated in yellow.The

second phase happened along the State Highway 65. In 1980 when the Government developed the Jagannath Spinning Mill at Phase 3 , leased land was given to the weavers also at Phase 3. Phase 4 has developed in the present millenium

6.4 Housing
6.4.1.1 Type of Structure

LEGEND

HOUSING
HOUSING TYPE
KUCHHA
PUCCA
SEMI-PUCCA
KUCHHA & PUCCA
HOUSE WITH CATTLE SHED

Fig 6.4 Map showing the distribution of HousingType (Source:Primary)

47% of the houses are pucca. The kuccha houses are located mostly along the Jagannath Spinning Mill .There are very few houses which are kuchha and are along the eastern side of the GP.

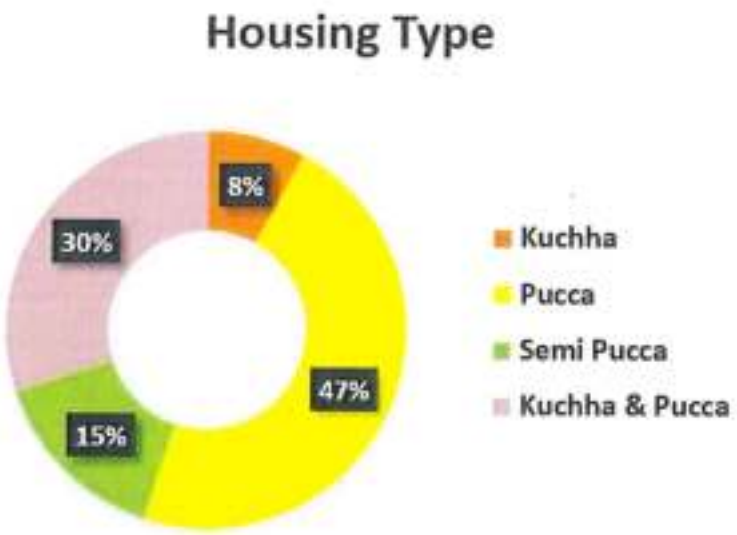


Fig 6.5 Pie-chart showing the distribution of HousingType (Source:Primary)

Households by Type of Structure of Census Houses					
Permanent	Semi-Permanent	Total Temporary	Serviceable	Non-Serviceable	Unclassifiable
61.1	20	18.8	16.9	1.9	0

Table 6.1 Distribution of HousingType (Source:Census 2011)

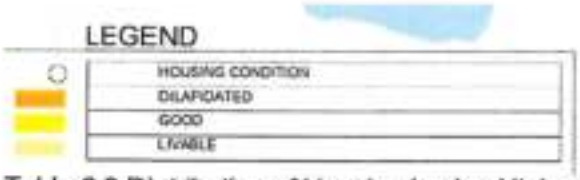
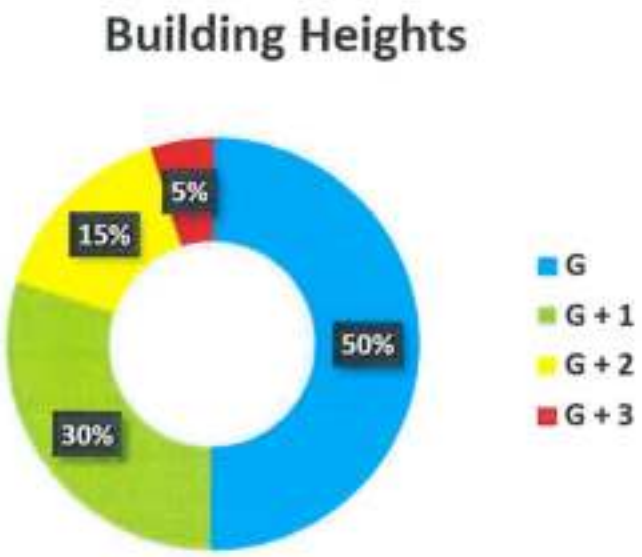


Table 6.2 Distribution of Housing having kitchen facility (Source:Census 2011)

Kitchen facility							
Total	**Cooking inside house:**	Has Kitchen	Does not have kitchen	**Cooking outside house:**	Has Kitchen	Does not have kitchen	**No Cooking**
100	75.6	26.1	49.5	24.2	2.6	21.6	0.2
100	75.6	26.1	49.5	24.2	2.6	21.6	0.2

6.4.3 Housing by height

Fig 6.8 Pie Chart showing distribution of houses as per height of structure(Primary Source)



Most of the houses are G and G+ 1 (2 floor structures) at 80%. Only 20% of the houses are 3 floors or higher. It gives an overall low skyline which maintains the rural character.

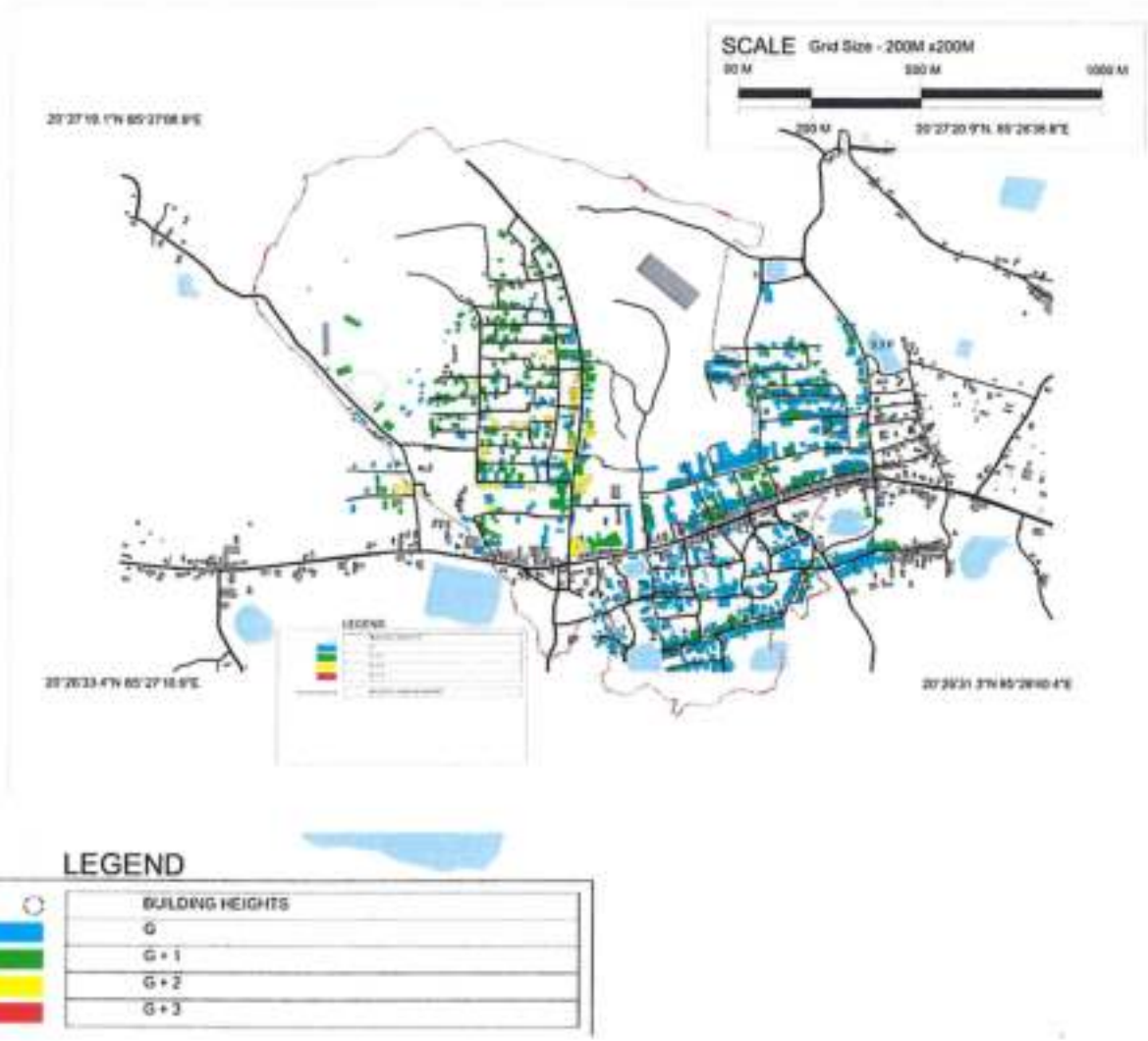


Fig 6.9- Map showing distribution of houses as per height of structure(Primary Source)

6.4.4 Housing by Age

Fig 6.10- Map showing distribution of houses as per age of structure(Primary Source)

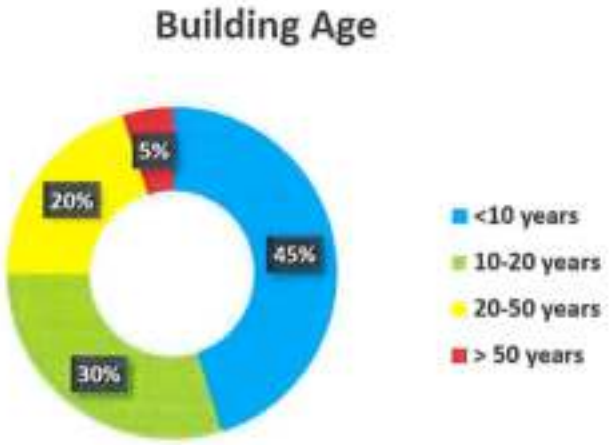


Fig 6.10 Pie Chart showing distribution of houses as per age of structure(Primary Source)

As can be seen most of the houses are new constructions(less than 10 years old). 30% of the houses are between 10-20 years. There has been 75% of the construction in recent years (last 20 years)

6.4.5 Household distribution

6.4.5.1 By type of fuel for cooking

Type of Fuel used for Cooking									
Fire-wood	Crop residue	Cowdung cake	Coal,Lignite,Charcoal	Kerosene	LPG/PNG	Electricity	Biogas	Any other	No cooking
82.2	0.5	0.2	0.1	0.2	16.7	0	0	0	0.2

Table 6.3 Distribution of Household with type of fuel for cooking (Census 2011)

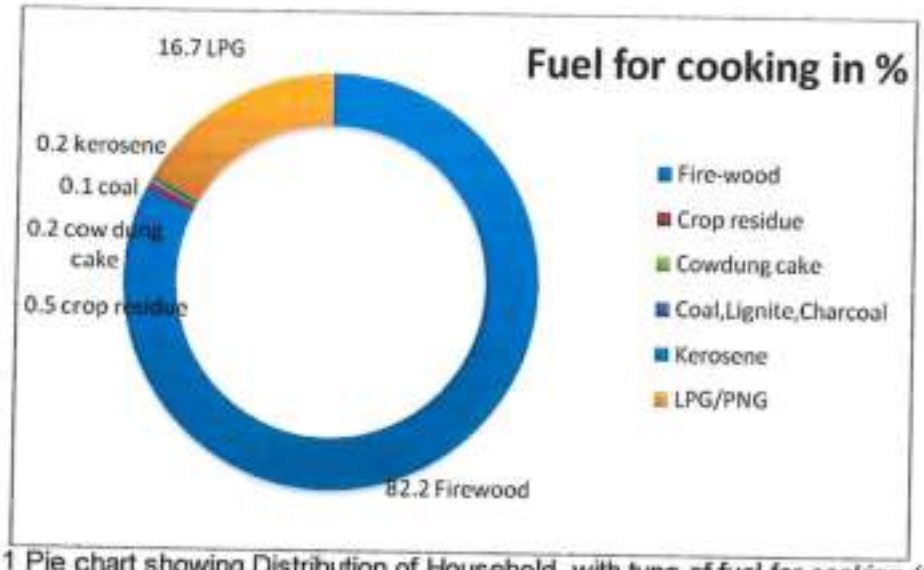


Fig 6.11 Pie chart showing Distribution of Household with type of fuel for cooking (Census 2011)

6.4.5.2 By toilet facilities

Pit System	Flush System	Service	Other
28	904	0	4

Number of households having latrine facility within the premises	Flush/pour flush latrine connected to			Pit latrine		Night soil disposed into open drain	Service Latrine		Number of households not having latrine facility within the premises	Alternative source	
	Piped sewer system	Septic tank	Other system	With slab/ ventilated improved pit	Without slab/ open pit		Night soil removed by human	Night soil serviced by animal		Public latrine	Open
37.8	0.3	24.3	0.6	5.7	5.8	0.2	0.8	0	62.2	0.1	62.1

Table 6.4 Distribution of Household with Toilet Facilities,Census 2011

6.4.5.3 By roof material

Material of Roof								
Grass/ Thatch/ Bamboo/ Wood/Mud etc.	Plastic/ Polythene	Hand made Tiles	Machine made Tiles	Burnt Brick	Stone/ Slate	G.I./Metal/ Asbestos sheets	Concrete	Any other material
23.9	0.1	2	2.4	0.1	2.7	38.2	30.7	0

Table 6.5 Distribution of Household with Roof Material,Census 2011

6.4.5.4 By wall material

Material of Wall									
Grass/ Thatch/ Bamboo etc.	Plastic/ Polythene	Mud/ Unburnt brick	Wood	Stone not packed with mortar	Stone packed with mortar	G.I./ Metal/ Asbestos sheets	Burnt brick	Concrete	Any other material
3.5	0	30.2	0.1	1.4	25.4	0	39.4	0	0

Table 6.6 Distribution of Household with Wall Material,Census 2011

6.4.5.5 By Floor Material

Material of Floor						
Mud	Wood/ Bamboo	Burnt Brick	Stone	Cement	Mosaic/ Floor tiles	Any other material
45.5	0.1	0.4	0	53.4	0.6	0
45.5	0.1	0.4	0	53.4	0.6	0

Table 6.7 Distribution of Household with Floor Material,Census 2011

The village has a moderate standard of living. Also it is a village which is classified as Open defaecation free with toilets in a large number of houses (many of which have been added under the Swacchh Bharat Scheme). The buildings are low rise and a little more than half live in good houses

6.5 Social Infrastructure

6.5.1 Educational Facilities

INFRASTRUCTURE FACILITY	2011 STATUS
Anganwadi	3
PrimarySchool	7
MiddleSchool	5
SecondarySchool(HIGH SCHOOL)	2
Sr.SecondarySchool(+2)	1
Colleges	1 JUNIOR COLLEGE

Table 6.8- Educational Facilities (Primary Survey)

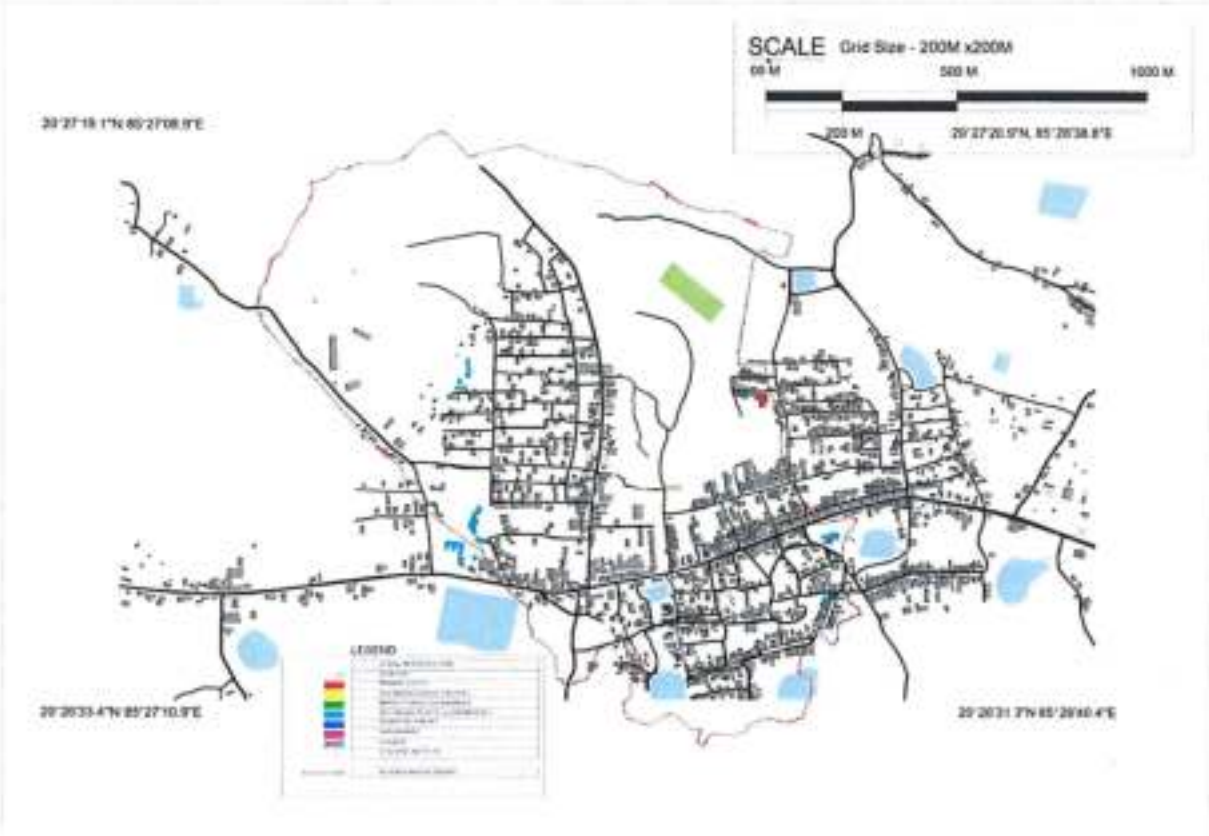


Fig 6.12 Map showing location of educational facilities(Primary Source)

6.5.2 Health Care Facilities

Facility	
Primary Health Sub Centre	2
Primary Health Centre	1

Table 6.9 Health Care facilities(Primary Source)

Fig 6.13 Map showing location of health facilities(Primary Source)

LEGEND

LOCATION AND ACCESIBILITY OF HEALTH FACILITIES
CLINIC
PHC
CHC
OTHERS
0.5 KMS BUFFER
1.0 KMS BUFFER

6.5.3 Socio-Cultural Facilities

Others	Numbers
Veterinary Hospital	-
PostOffice	1
Community Room	-
Community hall & Library	2
Commercial& Coperative Bank	4
Skill development Centre	-

Agriculture Services (Repair and Maintenance of Implements)and Pr ocessing Centre (fertilizer, seeds and pesticides)and Paddy Collectio n Centre	1 Paddy collection centre
Kalyan Mandap	2

Table 6.10 Socio Cultural facilities(Primary Source)

Fig 6.14 Map showing location of other socio-cultural facilities(Primary Source)

6.5.4 Commercial Facilities

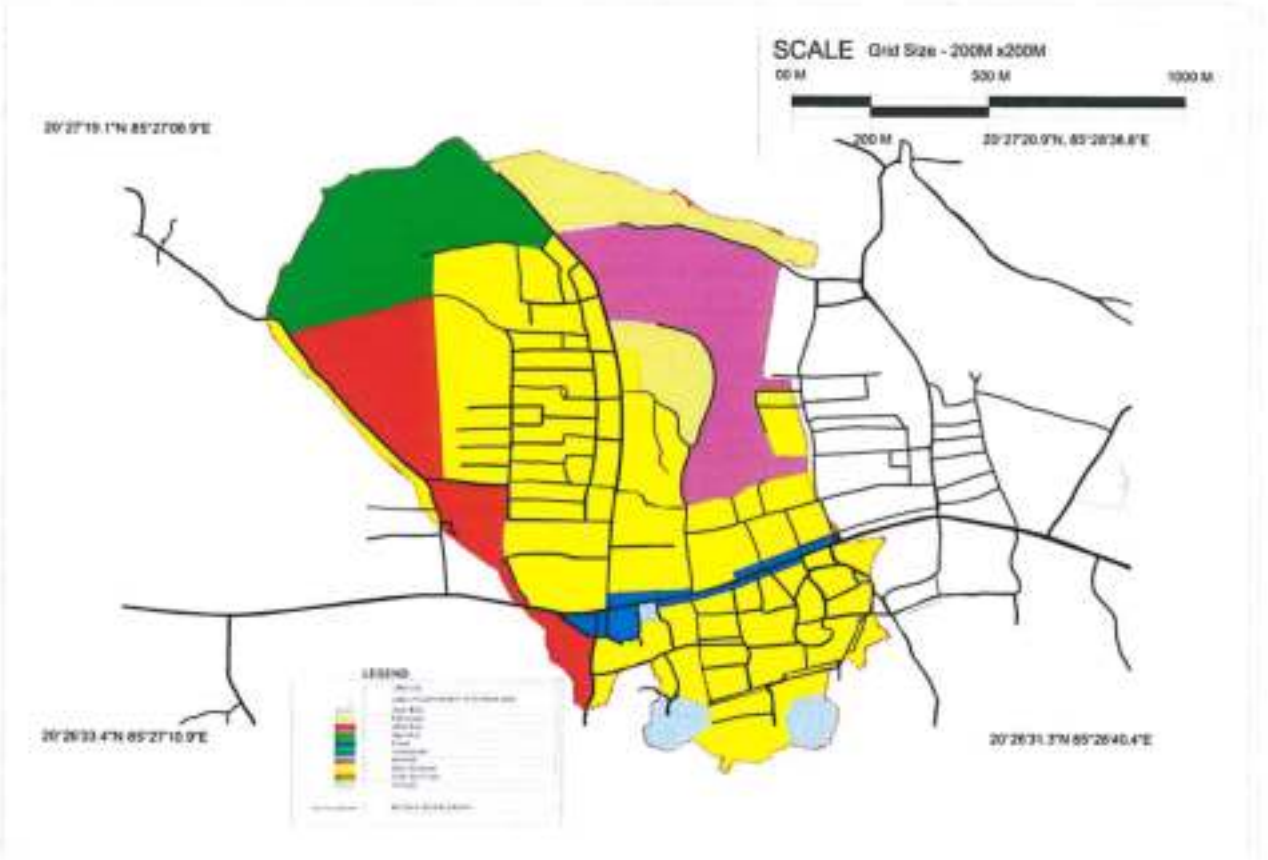


Fig 6.15 Map showing location of commercial facilities(Primary) marked in deep blue

6.5.5 Industrial Facilities

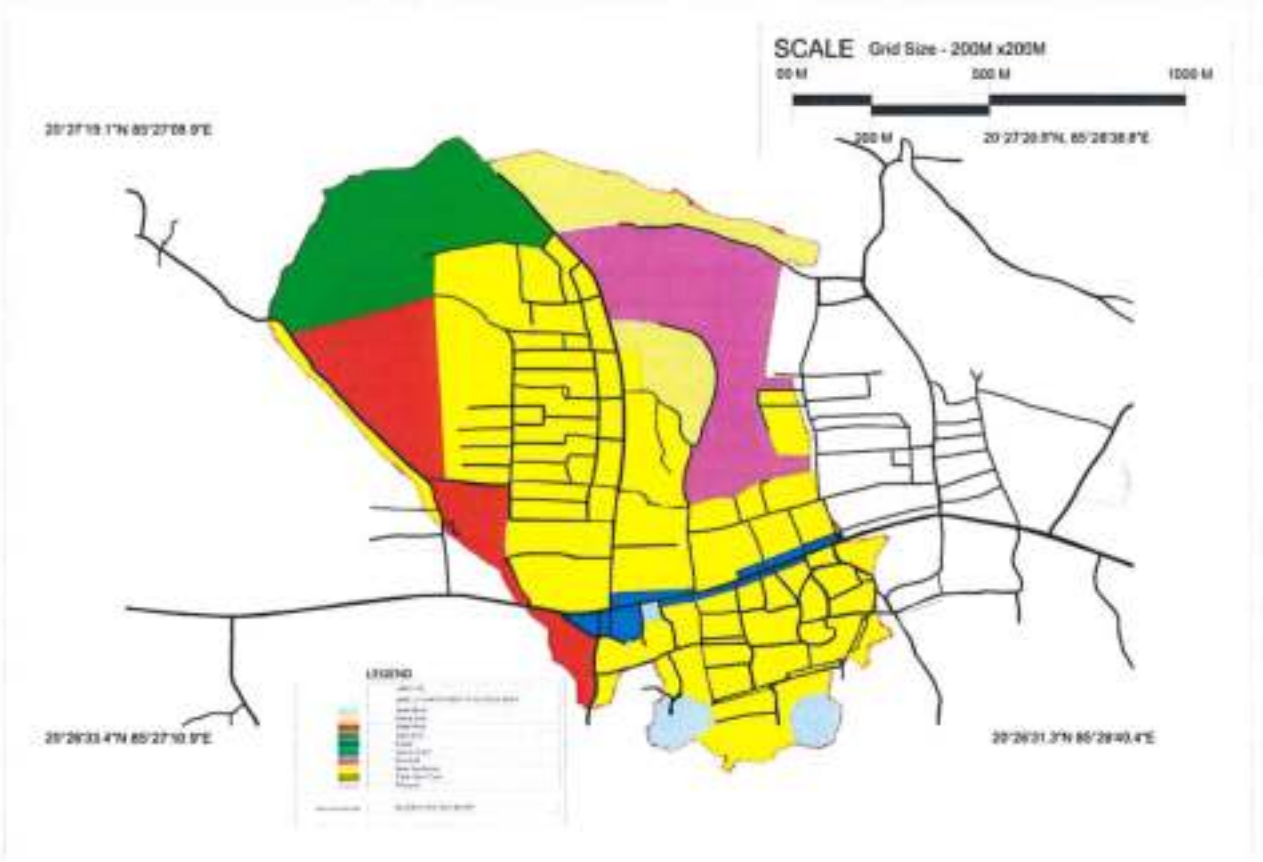


Fig 6.16 Map showing location of industrial facilities(Primary) marked in purple

6.5.6 Recreational Facilities and Open spaces

Although there are many open spaces and playground areas near schools but they are not equipped with play equipments. One ground near the Pratapsasan Girls High School is enclosed with compound wall but it is not developed. There are no parks , neighborhood or children's parks.

6.6 Physical Infrastructure

6.6.1 Water Supply

Main Source of Drinking Water									
Tapwater from treated source	Tapwater from un-treated source	Covered well	Un-covered well	Handpump	Tubewell/ Borehole	Spring	River/ Canal	Tank/ Pond/ Lake	Other sources
2	8.8	3.7	52.9	19	14	0	0	0	0.1

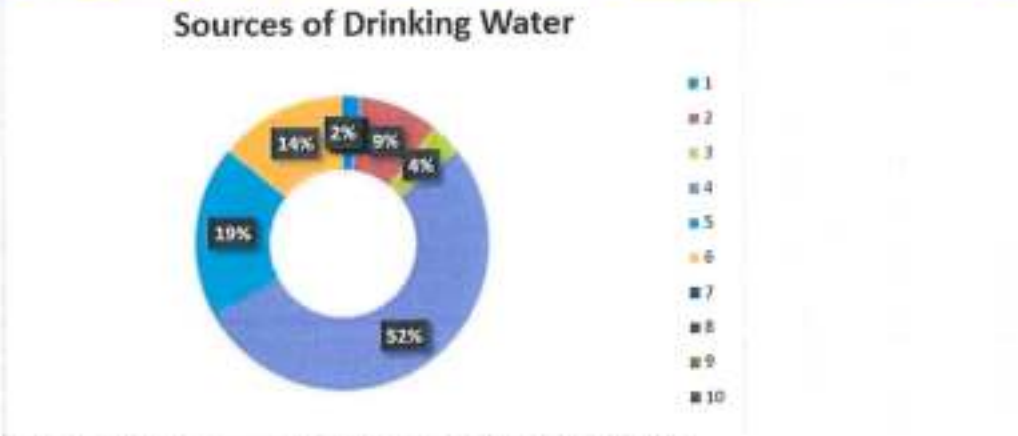
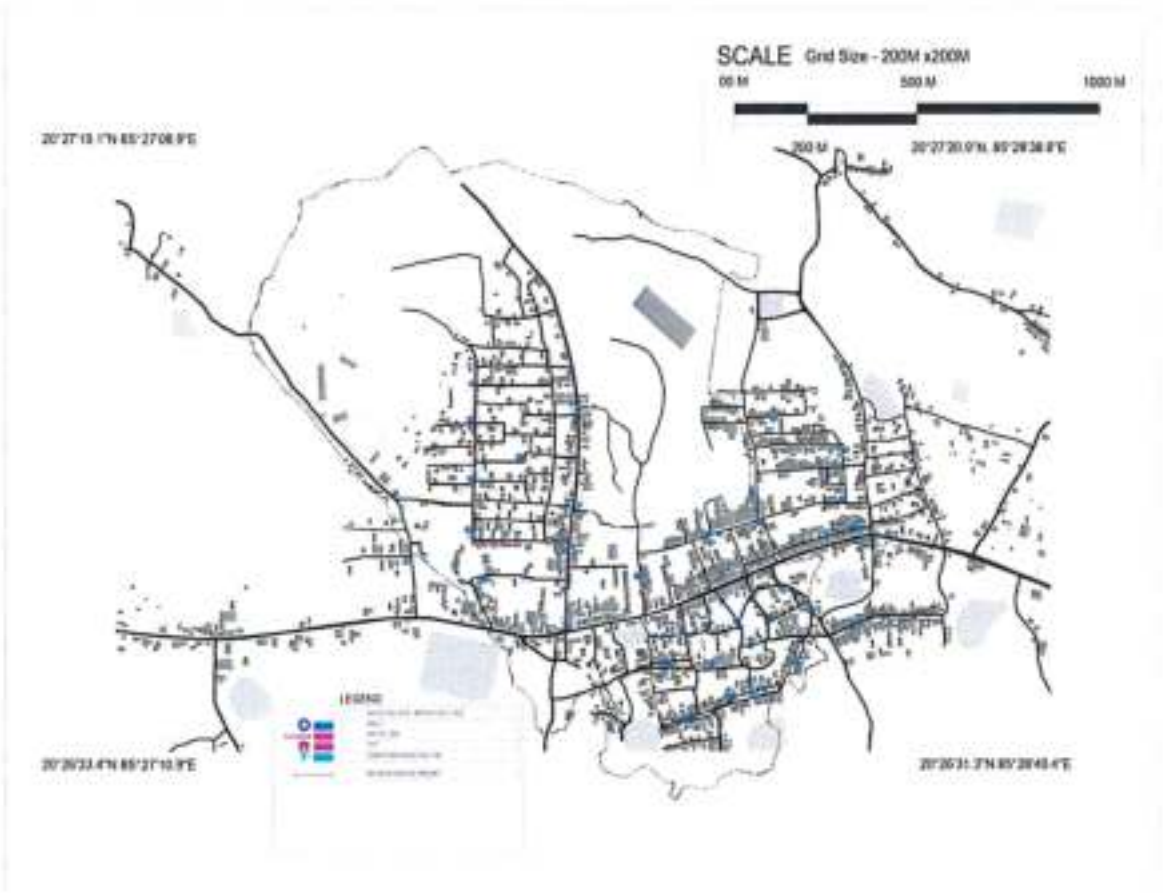


Table 6.11 Main Source Of Drinking Water (Census 2011)

Location of drinking water source		
Within premises	Near premises	Away
16	76.9	7.2

At present there is 5 lakh litres of water storage in overhead tank which is near the village haat . But taking the water requirement standards as per RADPFI @ 140 litres per capita per day(70 lpcd for domestic and 70 lpcd for weaving activity) there is a requirement of 11 lakh litres for which provision will have to be made. Most of the water supply is from hand pumps/tube wells and sent to overhead tank from where it is supplied by piped network. Since the supply network is under construction, most of the houses now still rely on handpumps and wells.



5.4	**WATER RELATED INFRASTRUCTURE**
5.4.1	Well
5.4.2	Water-line
5.4.3	OHT
5.4.4	Hand-pump/Municipal Tap

Fig 6.17 Map showing location of water related infrastructure(primary)

6.6.2 Drainage System
6.6.2.1 Sewerage System
6.6.2.2

Fig 6.18 Map showing Drainage and Sewerage and Solid Waste Network (Census 2011).

7 PROPOSED SPATIAL DEVELOPMENT

7.1 Stakeholders Perception

A meeting was held with the Sarpanch, Panchayat Officer and Panchayat workers to discuss the issues and vision of the GP . They identified some development areas for the GP

1. The GP has a weekly mandi at the village haat abutting the State Highway 65 where all the nearby villagers come . A community toilet was suggested by the sarpanch here.
2. Landfill for dumping was also suggested besides a designated place for gabage collection in every ward.
3. Open areas to be developed for playground and for fairs and festivals and display .

7.2 Identification of Issues

Majority of the roads did not have storm water drains and hence there is water logging on the roads. The buildings were abutting the roads with no setback and the upper floors projecting on the roads increased the water logging. There is no designated place for solid waste dumping and garbage overflows onto the road. The water bodies of Bodo Pokhari and other ponds are contaminated.

The steps to houses projected onto the road with parking on the road which caused a lot of congestion and inconvenience to moving traffic and four wheeler movement. The buildings at junctions disturbed the visibility from adjacent road perpendicular to it. There were drains on one

side of the road even in the older settlement.

Drying of yarn and weaving activity in common community areas.

Open dumping. No designated dustbins and hence all open areas are dumping grounds.

Open wells and hand pumps as sources of drinking water

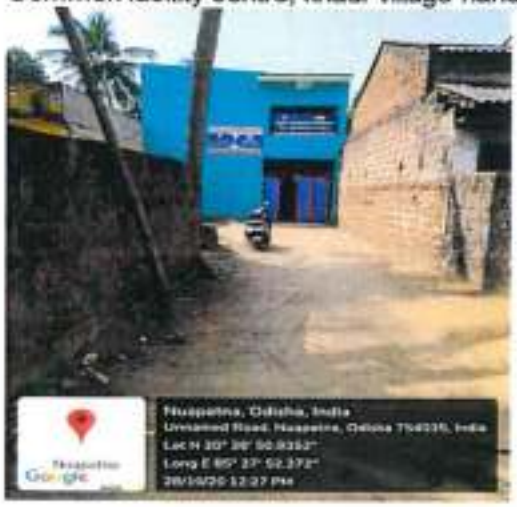
Recent laying of water lines which are not commissioned as yet.

Yarn making and drying of yarn at a typical weaver house

Community Well

Dairy farming occupation

Adarsh khadi utpadak sangh , khadi and village industries commission and Common facility centre, khadi village handicrafts commission



ISSUES IDENTIFIED AT GP LEVEL

Economy of Handloom Industry	**Quality limitations to export potential** – Uniform design and shade in greater lots is difficult because of peg warping. Colour bleeding is a common problem. A research and Development cell is inevitable for updation of each of the stages involved in production of tie and dye fabric. Colour matching is the greatest problem in tie and dye industry. **Raw Material Supply**-All spinning mills in Orissa including Sri Jagannath Spinning Mills at Nuapatna are closed. So the cotton yams are procured from outside the State especially from south. The weavers of the area got cotton yam at a higher price. For silk also, the cluster depends upon West Bengal and Kamataka. There is no clear and transparent channel for procurement and distribution of silk and tassar yarn to weavers. The job is done now by the middleman and local trader. There is a price difference of Rs.200 to Rs.300 per Kg. of material. Dyes and chemicals available also in the local market are not good qualitatively. **Increase the Product range**- To meet export market involve designers from NIFT etc in a long term and continuous basis at least for three months to six months and diversify the product range. **Financial crunch** -Working capital is the pivot which runs the business and maintains the livelihood of the weavers. The additional inputs like, training skill upgradation, innovation of new designs, market research etc. can only be effective when all the looms are running effectively. But due to various reasons, the working capital liquidity of the cluster is very poor. **Marketing**- Though there is a good marketing infrastructure, there is no systematic management of the infrastructure and no inter relationship between different points. The cluster has no direct link with international market. Present structure needs: Market survey and research unit involving quantitative, qualitative, fashion design, style and choice factors. Though there are many steps taken by textile department but not much result has been achieved in terms of establishing sustainable market linkages with high end market. The products are only suitable for domestic consumption inside India. A planning unit should be evolved with the feedback from market survey unit. There is also a need of forming structured system to get market feedback for different products and designs and dissemination of the feed back to the weavers. **Infrastructure**- 1.Designing and Market research center and 2.There is a stated need for Centralized Training design development centre (national and international level) for the cluster. 3. Dyeing Units

	4. Well trained salesmen in Sales Units
Education	Being the only census town of Tigiria block, the **literacy rate of Nuapatna at 85.53%** is much higher than the state average of 72.9 and block average of 81.7% High literacy level(much higher than state and block level literacy). male literacy rate is 90.06% and female literacy rate is 76.4%.)Adequate educational facilities .Skill development center should be provided The advantage of good literacy level should be used for technological advancement and digital marketing. Educational institutes are adequate and well accessible. Self employment opportunities should be exploited to enhance livelihood.
Transportation	Well connected to nearby towns by State Highway(65) The transport node needs to be strengthened with at least 10 bus bays and a taxi stand for tourism Some of the arterial and village roads(R3 and R4) need to have covered drains
Housing	Housing conditions were good but lack infrastructure services. Houses are abutting the streets with no setbacks. Drinking water and water for tie dye activities needs to be strengthened An additional overhead tank (5 lakh litres) connecting to a water supply network is needed. No Street lighting and storm water drainage were provided in residential areas No sewerage network and solid waste collection within housing areas
Social Infrastructure	Ample open spaces present but not developed /equipped as playgrounds and park s. There should be play equipments and seating places and developed landscape in open spaces so that they do not become dumping grounds for garbage. Absence of development around ponds as religious and recreational spaces. Instead the Pokhris and spaces around temples should be developed for gatherings on religious occasions. It will prevent the ponds from being converted into built spaces and leading to drainage issues as they are natural water sinks of the area.

7.3 SWOT Analysis and VISION Statement

STRENGTH
- Traditional historic handloom cluster
- Close proximity to the state capital and other important trade nodes
- Coorperative societies for handloom exists
- Spinning Mill for cotton yarn (raw material) exists

WEAKNESS
- Lack of sewerage network,storm water management,poor road conditions within residential areas
- Deficiency of proper drainage systems
- Very low water table,thus water resources need to be channelized and planned effectively.
- Most places do not have street lights

OPPORTUNITY
- Opportunity to be developed as a major handloom hub and produce export quality materials by display and exhibition spaces
- Opportunity to develop it for craft corridor by linking up all clusters and position as handloom holiday
- Positioning it as a craft village and link with tourism by providing guest houses and home stay facility

THREAT
- Very low ground water,creates water shortage
- Due to multiple usage(weaving activities,bathing,washing) of the existing water bodies,ground water contamination may occur
- threat to retain handloom workforce in GP due to dying handicrafts industry
- Existing vernacular housing in poor repair and maintenance
- Loss of jobs due to closure of Spinning Mill

TO CREATE A SUSTAINABLE AND COMPREHENSIVE PLANNED DEVELOPMENT OF THE HANDLOOM CLUSTER FOCUSING TOWARDS DEVELOPING IT AS A CRAFT VILLAGE BY LINKING UP ALL THE HANDLOOM AND HANDICRAFT CLUSTERS ALONG THE TRANSPORT CORRIDOR (STATE HIGHWAY 65) AND POSITIONING IT FOR A HANDLOOM CUM TOURISM HOLIDAY CIRCUIT.

7.4 Projection and Future Spatial Development

7.4.1 Demographic Projection

7.4.1.1 Arithmetic Increase

This method is suitable for large and old city with considerable development. If it is used for small, average or comparatively new cities, it will give low result than actual value. In this method the average increase in population per decade is calculated from the past census reports. This increase is added to the present population to find out the population of the next decade. Thus, it is assumed that the population is increasing at constant rate. Hence, dP/dt = C i.e. rate of change of population with respect to time is constant. Therefore, Population after nth decade will be Pn= P + n.C Where, Pn is the population after n decade and P is present population.

P_{1991}= 6139
P_{2001}= 7846
P_{2011}= 8057
From 1991 to 2001 and from 2001 to 2011 the average increase in population is =(1707+211)/2= 959
P_{2021}= 8057+ 1*959= 9016
P_{2031}= 8057+ 2*959= 9975
P_{2041}= 8057 +3*959= 10934
P_{2051}= 8057 + 4*959= 11893

Year	1991	2001	2011	2021	2031	2041	2051
Population	6139	7846	8057	9016	9975	10934	11893

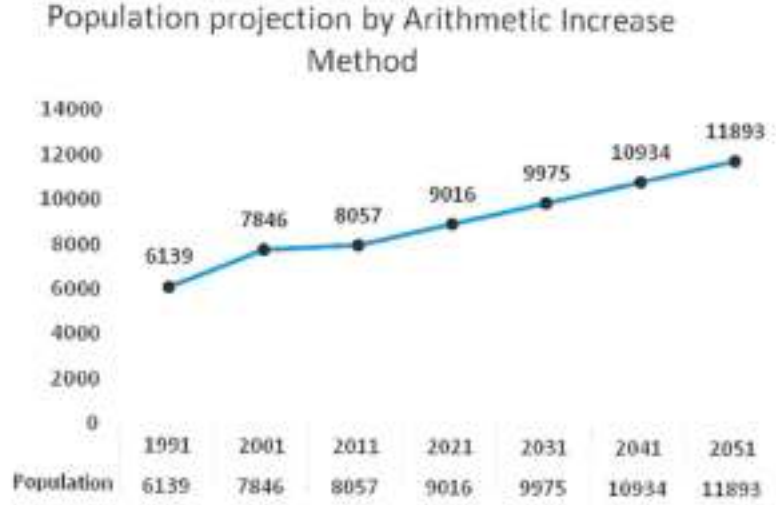


Fig 7.1- Population Projection by Arithmetic Increase Method

7.4.1.2 Geometric Increase

In this method the percentage increase in population from decade to decade is assumed to remain constant. Geometric mean increase is used to find out the future increment in population. Since this method gives higher values and hence should be applied for a new town at the beginning of development for only few decades. The population at the end of nth decade 'Pn' can be estimated as: Pn = P (1+ IG/100) n Where, IG = geometric mean (%) P = Present population N = no. of decades.

P1991= 6139
P2001= 7846
P2011= 8057

IG/100= (0.28*0.03)1/2=0.09 (where 1707/6139 =0.28 and 211/7846 = 0.03)
P2021=8057*(1+0.09)= 8754
P2031=8057*$(1.09)^2$= 9511
P2041= 8057*$(1.09)^3$=10333
P2051= 8057*$(1.09)^4$=11227

Year	1991	2001	2011	2021	2031	2041	2051
Population	6139	7846	8057	8754	9511	10333	11227

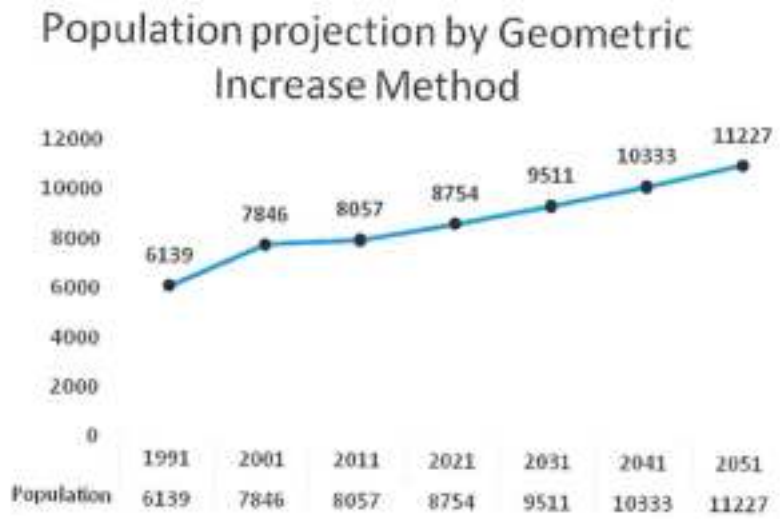


Fig 7.2- Population Projection by Geometric Increase Method

Since Nuapatna is a census town which is a major textile cluster of Tigiria Block , hence population projection by the geometric increase method has been used.

7.4.2 Economic Revitalisation

7.4.2.1 Handicraft Tourism development

Fig 7.3– Handloom Cluster of Tigiria and Badamba Block

Badamba Patachitra Painting, Baranga Terracota, Bhatimunda Brass and Bell Metal,Bidanasi Woodwork and masks, Bundhanima Sholapith craft, Cuttack applique, Cuttack Brass and Bell Metal,Cuttack Horn and Bone, Cuttack Filigree,Cuttack Pottery and Claywork, Maniabandha Tie and Dye, Nuapatna Khandua handloom, Talabasta Cane and Bamboo, Trilochanpur Goldengrass, Narsinghpur Dhokra craft are very famous handicraft in the Cuttack district.

Nuapatna has good potential of being connected to this Tourist and Handicraft circuit which can be a handicraft cum tourist holiday tour(see Fig 4.4) lying on State Highway 65 , starting from:

1. Bhubaneswar- Capital Of Odisha
2. Cuttack- Old capital of Odisha with many handicrafts mentioned above
3. Ansupa Lake- Ecotourism Spot
4. Nuapatna- Handloom Centre
5. Maniabandha- Handloom Centre
6. Kantilo – Brass and Bell Metalwork

Fig 7.4 - Regional Connectivity of Nuapatna to Tourist and Handicraft Circuit

Since it also lies on the handicraft circuit it has enormous potential of being developed as a handicraft and heritage circuit.

7.4.2.1.1 Home Stays and Tourist Guest Houses`

Nuapatna should be developed as a handicraft and heritage centre lying on the 1-2 day tourist circuit wherein some homes and the guest houses at the Spinning Mill could be developed for Foreign and Indian visitors who would come for maybe a week or so to study and experience the art of handloom weaving. After being given a craft village status it will attract a lot of tourism as it can be projected as a handloom holiday as has been done in Rann of Kutch, Gujarat wherein the place is dotted with traditional houses, which are made of distinct patterns and designs and tourists take overnight camel safaris, watch birds, buy traditional products, learn skills from the artisans, or just chill along enjoying the serene beauty of the village.

It could be not only a platform to sell the handloom directly in the form of traditional sarees , lungis, gamchas and also diversified products like furnishings, fashion wear , home decorations etc.But also a platform to connect 'trained professionals who can work as tourist guides in such areas to the ones who are planning such a visit can be made. It can be collaborated with event organizing companies to plan rural festivals , village games , dance forms and kirtan sabhas which can be made exciting enough to attract the urban audience to participate as tourists.

The area shown in purple which is the existing industrial area housing the Jagannath Spinning Mill and existing guest houses can be revived and refurbished for Bed n Breakfast facility which will boost the local economy as they provide food facility to the tourists.

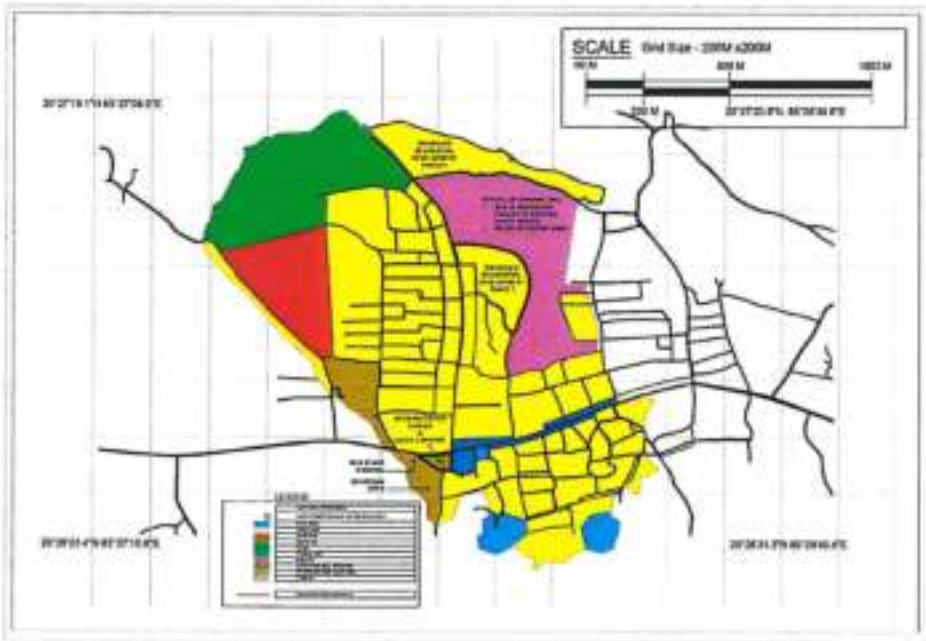


Fig 7.5- Proposed Land Use plan till 2051 showing Tourist Guest houses and Home stay facility

7.4.2.2 Reinventing the Ikkat handloom Industry

Contemporary adaptation of Craft to reinvent the use of Ikkat Handloom in Interior decoration, , lighting fixtures , western wear

Development of contemporary products like furnishings for high end market

Fashion wear and accessories like bags , shoes , sandals etc.

There is a need for creating a market niche which will cater to high end demand in interiors and building furnishing . ATeam of professionals can collaborate with artisan community like Architects/ industrial designers/ fashion designers from KIIT University and guide them on designs and process and product innovations.

7.4.2.3 Agriculture and Livestock

There is not too much of agricultural land under cultivation in the GP . They are mostly rainfed land with a single crop of Paddy. Only 2 hectares of land are under cultivation. The Rabi crops are Moong and vegetables are also grown.
There is a mandi which happens twice a week(Tuesday and Saturday).People come from Athgarh, Banamalipur and Gadadharpur to sell in this haat. Athgarh produces a lot of vegetables. There is a paddy collection centre here. Water scarcity is a huge problem here and hence irrigation is difficult.
Milk production is through 417 cattle and many households keep goats.

7.4.2.4 Women Entrepreneurship

There is scope to involve women, in a variety of ways. They are already contributing in a large way in the handloom weaving industry. They can also become a part of the designing community if a marketing and design centre is set up. Women self help groups can contribute a lot in the sales and marketing of diversified product range .

There is scope to involve women in small scale organic cultivation of vegetables. They may rely on the manure generated by the vermiculture pits and the biogas plant and grow organic vegetables. Organic produce needs to be certified by a certifying authority and the soil in which the produce is grown needs to be free from the use of chemicals for at least three years. The individuals would need to be educated and trained with regard to the parameters and process of organic farming of vegetables.Land may be given to Self help groups as a starting point from Government land.

7.4.3 Housing Projections and Shortage

Table 7.1-Projections of Housing Shortage

Year	Households	Acceptable Housing (Growth @2%Every Year)	Congestion(6.5% of No Of Households)	Obsolete(4.3% Of Acceptable Housing(Permanent + Semi-permanent)	Total Housing Shortage	Housing Requirement
2011	1698	1678	110	72	203	1881
2021	1945	2014	126	87	145	2158
2031	2113	2416	137	104	-62	2355
2041	2296	2900	149	125	-329	2570
2051	2495	3480	162	150	-673	2807

Estimated household size= 4.5 persons per household.

Total Housing Shortage =(Total Households – Acceptable Housing) + Congested Housing + Obsolete Housing
Acceptable Housing growth every year is assumed at 2%. Congestion is assumed at 6.5% of no of households and Obsolete housing is 4.3% of Acceptable Housing.
(Calculation based on Planning Commission Estimation of Rural Hsg Shortage for 12th Five Year Plan)

7.4.3.1 Land Area Requirement

Projected Housing Requirement till 2051
Additional number of housing required= 2807 – 1698 = 1109
Proposed density (RADPFI)= 60 plots per hectare
Land area required for housing = 18.5 hectares
Required Open Spaces(RADPFI)= 1.21 hectare/200 housesLand area required for Open spaces= 6.71 hectares

7.4.3.2 Neighborhood Planning

These are the requirements for Playgrounds , housing area parks and Neighborhood parks as per RADPFI guidelines which have been projected for every decade till 2051.
Table 7.2-Projections of Open space requirements till 2051

Infrastructure Facility	2011 status(existing)	RADPDFI STANDARDS, 2016	Infrastructure Facility	Requirements After Population Projection			
				2021 (9016)	2031 (9975)	2041 (10934)	2051 (11893)
Playground	-	1.00 hectare open area for 5000	1/5000	2 Hectare	2 Hectare	2 Hectare	2 Hectare
Housing Area Park	-	0.5 hectare for 5000 people	1/15000	1 Hectare	1 Hectare	1 Hectare	1Hectare
Neighbourhood Area Park	-	1 hectare for 15000 persons		1 Hectare	1 Hectare	1 Hectare	1 Hectare

7.4.4 Social Infrastructure Projections

7.4.4.1 Education Facilities

Table 7.3-Projections of Educational Facility requirements till 2051

INFRASTRUCTURE FACILITY	2011 STATUS/EXISTING	RADPDFI STANDARDS,2016	State Town & Country Planning Acts & Panchayati Raj Acts	RURBAN MISSION(2019)	Requirements After Population Projection			
					2021 (9016)	2031 (9975)	2041 (10934)	2051 (11893)
Anganwadi	3	1/5000			sufficient			
PrimarySchool	7	1/5000	1/Km Radius For 300 Pop Minimum 2 Classroom 2 Teachers1 Classroom&1teacher Per 40 Students	1/2500 of land area 800 sqm	sufficient			
MiddleSchool	5	1/15000	1/3 Km Radius For 500 Pop	1/5000 with land area 4000 sqm	sufficient			

SecondarySchool(HIGH SCHOOL)	2	1/15000	1/GP	1/5000 with land area 4000 sqm	sufficient
Sr.SecondarySchool(+2)	1	-	2/Block		sufficient
Colleges	1 JUNIOR COLLEGE	-	1/Block		sufficient

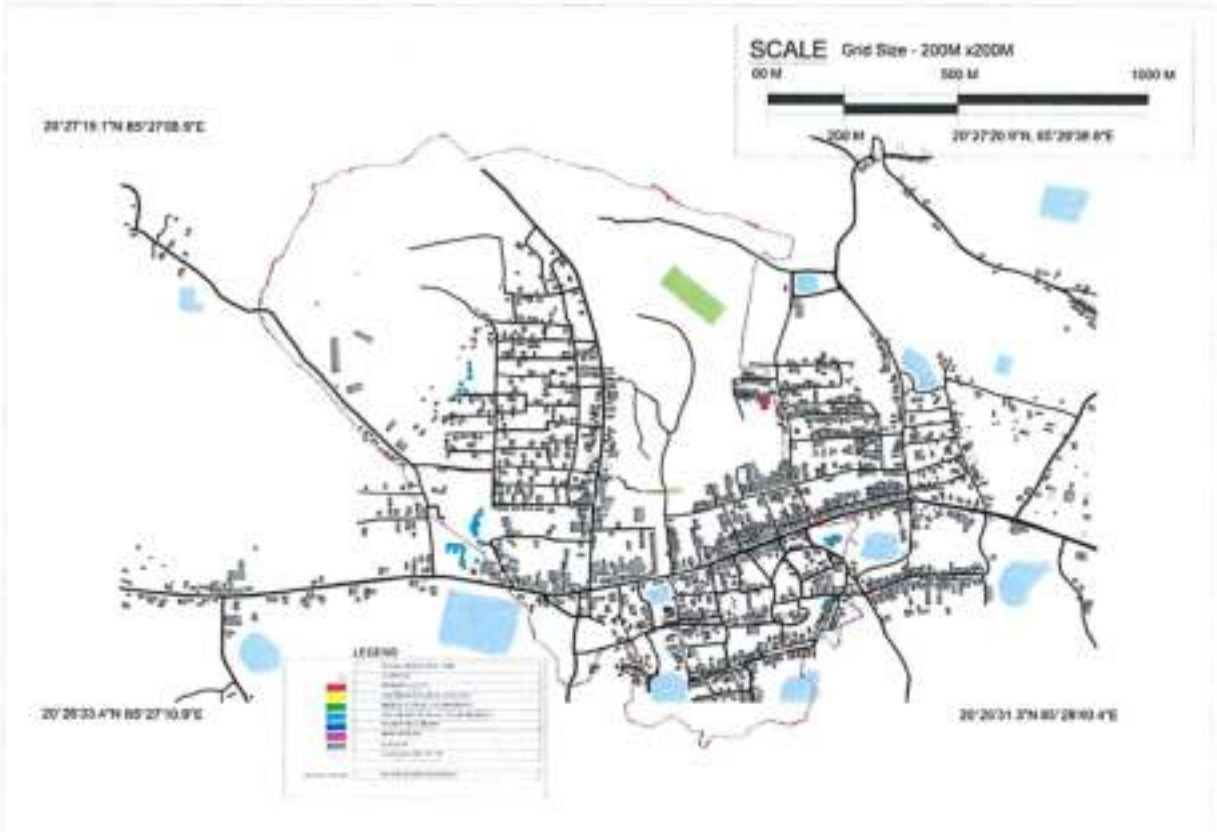


Fig 7.6-Map of Existing Educational Facilities

7.4.4.2 Health Care Facilities

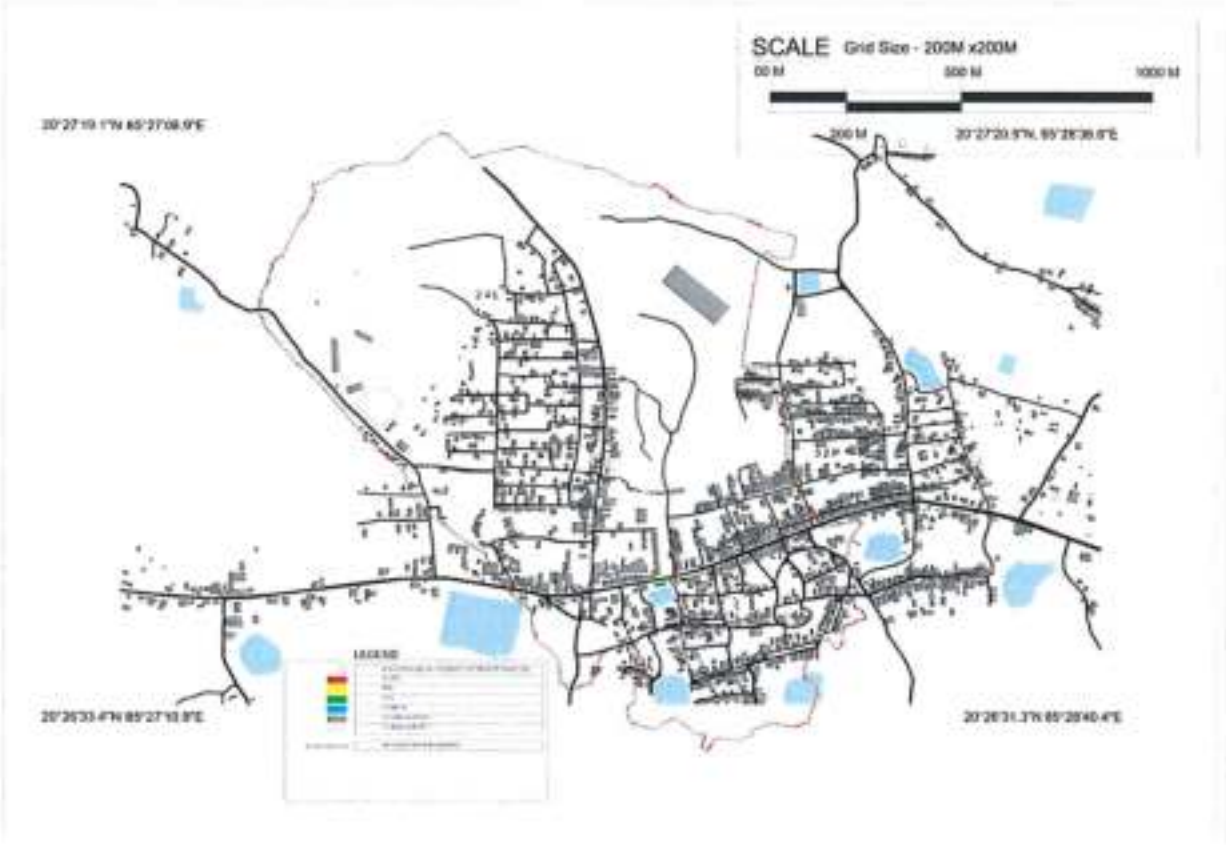


Fig 7.7 Existing Health care Facilities

	LOCATION AND ACCESIBILITY OF HEALTH FACILITIES
	CLINIC
	PHC
	CHC
	OTHERS
	0.5 KMS BUFFER
	1.0 KMS BUFFER

Table 7.4-Projections of Health Facility requirements till 2051

Infrastructure Facility	2011 Status(Existing)	RADPDFI Standards,2016	State Town & Country Planning Acts & Panchayati Raj Acts	RURBAN MISSION(2019)	Requirements After Population Projection			
					2021 (9016)	2031 (9975)	2041 (10934)	2051 (11893)
Pr.HealthSub Centre	2	1/15000	1/Gp With 2 Health Workers	1/3000-5000 with land area 800-1200 sqm	sufficient			
Primary Health Centre	1		1/30,000 Population		sufficient			

Maternity and Child welfare					
Hospital (Community Health Centre)					

7.4.4.3 Socio-Cultural Facilities

Table 7.5-Projections of Socio Cultural requirements till 2051

Infrastructure Facility	2011 Status(Existing)	RADPDFI Standards,2016	State Town & Country Planning Acts & Panchayati Raj Acts	RURBAN MISSION(2019)	Requirements After Population Projection			
					2021 (9016)	2031 (9975)	2041 (10934)	2051 (11893)
Veterinary Hospital	-				-	-	-	-
PostOffice	1	-	1/GP		1	1	1	1
Community Room	-		1/5000		2	2	2	2
Community hall & Library	2	1/5000	1/15000		sufficient			
Commercial & Coperative Bank	4	-	-	-	sufficient			
Skill development Centre	-				2	2	2	2
Agriculture Services (Repair and Maintenance of Implements)and Processing Centre (fertilizer, seeds and pesticides)and Paddy Collection Centre	1 Paddy collection centre			1/1000-5000 of land area 300-500 sqm	sufficient			
Kalyan Mandap	2				sufficient			

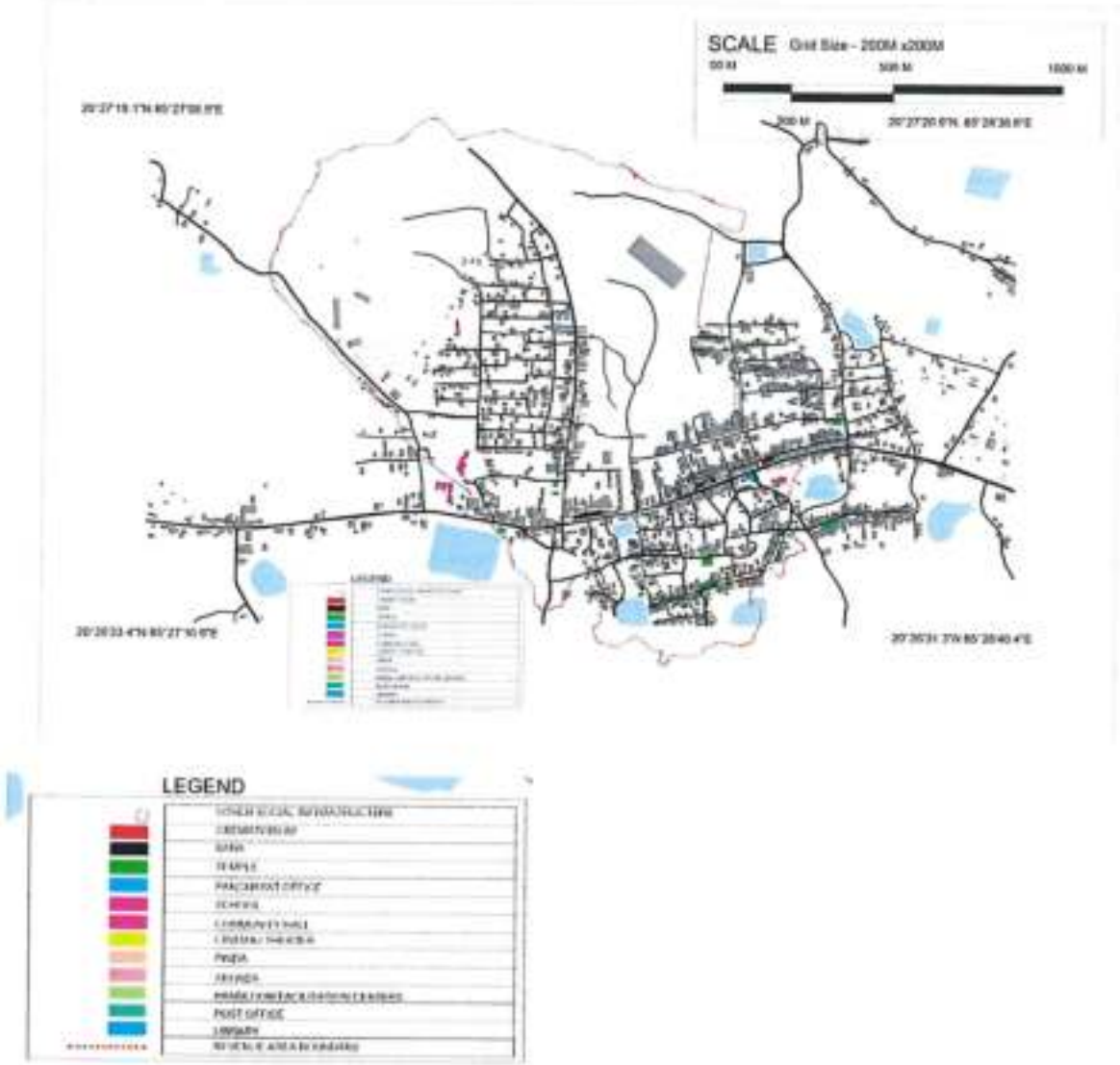


Fig 7.8- Map showing Existing Other Social Infrastructure

7.4.5 Physical Infrastructure Projections

7.4.5.1 Water Supply.

The ground water availability at Nuapatna is very poor. At present there is 5 lakh litres of water storage in overhead tank which is near the village haat . But taking the water requirement standards as per RADPFI @ 140 litres per capita per day(70 lpcd for domestic and 70 lpcd for weaving activity) there is a requirement of 11 lakh litres for which provision will have to be made. Most of the water supply is from hand pumps/tube wells and sent to overhead tank from where it is supplied by piped network. Since the supply network is under construction, most of

the houses now still rely on handpumps and wells.

Table 7.6-Projections of Water Supply Requirements till 2051

Infrastructure Facility	2011 Status (Existing)	RADPDPI Standards ,2016	Requirements After Population Projection			
			2021 (9016)	2031 (9975)	2041 (10934)	2051 (11893)
Handpump	Shown in Map	1/250 persons	36	40	43	48
Water Requirement (litres)@140 lpcd min	5 lakh lpcd	70(domestic) + 70(textiles)	11lakh lpcd	11 lakh lpcd	12 lakh lpcd	13 lakh lpcd

WATER RELATED INFRASTRUCTURE
Well
Water-line
OHT
Hand-pump/Municipal Tap

OHT Under construction

Fig 7.9- Map showing layout of water related infrastructure

7.4.5.2 Drainage System

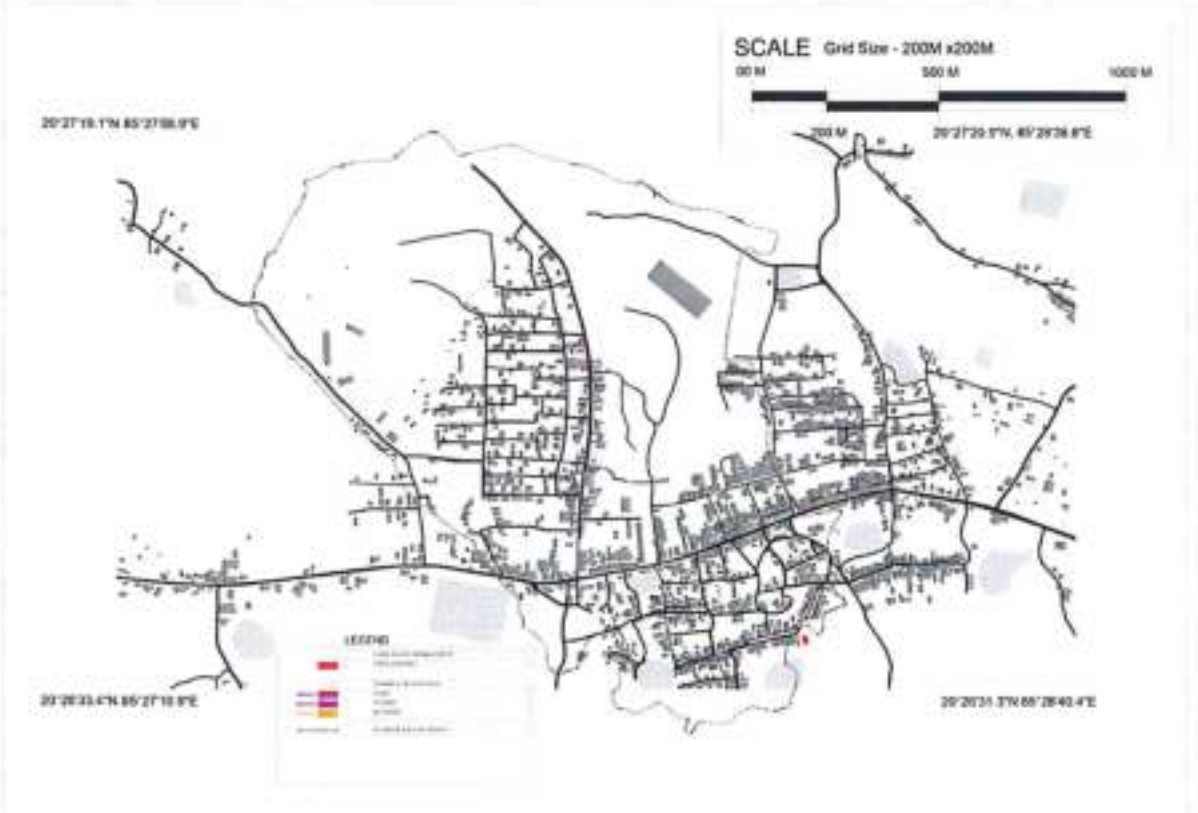


Fig 7.10 –Map showing layout of Drainage and Sewerage

Table7.7-Sewerage and Solid waste management Projection

Infrastructure Facility	2011 Status (Existing)	RADPDFI Standards,2016	Requirements After Population Projection			
			2021 (9016)	2031 (9975)	2041 (10934)	2051 (11893)
Community Toilet	Shown in Map	1 wc/100 users, 1 bath /100 users & 1 urinal / 100 users	1 community toilet for 500 users	1	1	2 community toilets for 500 users each
Solid Waste	1 hectare of composting site and landfill can handle 83.33 tonnes	150-250gms/cap/day	1 acre of landfill and composting site			1 acre of landfill and composting site
Liquid Waste		15,000 to 18,000 million liters/day	15000 million litres			18000 million litres

The sewerage and liquid waste disposal is mainly through a system of soakpits and septic tanks. Several houses have availed the system of toilet construction through Swacch Bharat Mission. However there is no proper disposal of waste water which is released into the street from the houses. There is no community toilet at the Village haat .

A uniform system needs to be devised for segregation of Solid waste at source and collection of solid waste .Segregation need to be done according to the following categories:

- Organic waste – that can be converted into manure. This manure would be used in the organic farming activities. Additionally, the organic waste may be sourced from surrounding poultry farms, and added to the vermiculture pits to convert them into manure.

- Domestic Biohazardous waste. Domestic Bio medical/hazardous waste needs to be segregated at the household level and collected separately. The concerned health department needs to then be contacted to dispatch the same to the nearest incineration facility.

- Reusable waste- Reusable or recyclable materials can be converted into sheets or used in construction activities. A norm may be set that these waste materials must be used in place of at least 15% of the construction materials for construction of new structure.

Recyclable Waste include:

- paper, cardboard - recycled into handmade paper, stationery products

recyclable plastic bags
    - metal, glass, bottles etc – which can be collected by scrap dealers
- Dry Waste – incineration, pulverizing etc.

At present there is not enough manpower for door to door solid waste collection . Hence all the solid waste is dumped in open areas which are overflowing with garbage. This is very unsanitary and unhygienic.

Gram panchayat should select the landfill site which should be:

- Located at the outskirts of the village
- Accessible
- On vacant/uncultivated land
- Located in the natural depressions with slight slopes
- Site should be such as to avoid surface water and ground water pollution.

7.4.5.3 Electrical Infrastructure

Absence of Street Lighting apart from commercial stretch. Transformers are regularly placed and positions are indicated in the map.

5.7	ELECTRICAL INFRASTRUCTURE
5.7.1	Light Posts
5.7.2	Transformer

Fig 7.11- Map showing Electrical Infrastructure

7.4.5.4 Transportation

There is no provision of shoulders in the CC road sections as a result the edge drop was found to be very high at places raising safety concern for the vehicles plying on the roads during crossing and overtaking maneuvers and also the edges are prone to damage in such conditions.

.Way finding was difficult because of absence of signage and legible directions to destinations. Fig 7.11 shows the various categories of roads but the widths should be maintained as per the norms given in Table 7.8

Rural Connectivity is a key component of Rural Development in India. Rural roads contribute significantly to generating increased agricultural incomes and productive employment opportunities, alongside promoting access to economic and social services. Rural Roads are the virtual lifelines for the vast multitude residing in rural areas. However, even today, only about 60% of villages/ Habitations in the country are connected by roads. A **Road Network** in a Block or District comprises of all categories of roads, such as National Highways, State Highways, Major District Roads, Other District Roads and Village roads, which facilitate the essential movement of persons and goods in an area. The **Road system** in India has been classified by the Indian Roads Congress into three categories.

The following table gives the minimum road widths for Village Roads

Table 7.8 : Norms for Village Roads

Village Road type	Road Description	Minimum Road Width (in metres)	Functions /remarks
R1	Link Roads	6M	Inter village , ODR, highways connectors.
R2	Major Through Roads	7.5M	Main village roads with drain on both sides to facilitate drainage system of the village
R3	Minor Through roads	4.5M	Other Village Roads
R4	Minor Through roads	3.75M	Village Lanes

(Source: Draft National Building Code, Doc: CED 46 (8064) WC, Nov 2015; Rural Roads Manual, 2002, Indian Road Congress)

Control of building activities along Highways and roads

In order to regulate and control building activities along National Highways, State Highways, Major District roads and major urban roads as notified by – PWD, the persons responsible for carrying out excavation, earth work, construction, demolition or repairs to all sites within 100 m. from these roads shall apply to the Panchayat concerned for permission to carry out such work in accordance with the set back .

Fig 7.12- Map showing Transportation network

7.4.6 Land Use Projections

The area requirement as per RADPFI guidelines to accommodate the projected population till 2051 is as follows

1.Land area required for housing (2051)= 18.5 hectares

2.Land area required for Open spaces(2051)= 6.71 hectares

3.Developed Playgrounds -4 hectare housing park area, 2 hectare Neighborhood area park .

4. Revival of Jagannath Spinning Mill (Employment to 1000 families)- existing 50 acres

5. Bus Depot with 10 bus bays , service and maintenance facilities, few shops,community toilets, refuelling station- 3 acre

6. Water supply increase for tye dye activities by rainwater harvesting and water retention tanks
7.Craft Village Status with following facilities(2 acres)
-interpretation and information centre
-Guest houses (existing guest houses refurbished in the Jagannath Spinning mill)
-Exhibition ground near Bus Stand
-Raw materials bank, testing laboratory for quality control, packaging facility
-Designing and Market Research Centre for Product design and diversification
- 4 nos. of quality dying units to Weaving Cooperative Society
-Sales outlets in commercial stretch
-Centralized Training design development centre (national and international level)
-Strengthening of support infrastructure to Common Facility Centres
8.Street lighting
9.Home Stay tourism

7.4.7 Land Use Control and Development Strategy

Given are the building development control norms specified by RADPFI for residential,commercial, industrial, institutional and Community, Educational and Health Use.

Norms for Residential development

S No	Plot area in Sqm	Max Ground Coverage (in %)	FAR	No of DU	Max height in metres	Setback (in metres)		
						Front	Side	Back
1	Below 50	90	1.8	2	6	1.2	-	-
2	51-100	80	1.6	2	6	2.0	-	1.5
3	101-150	75	1.5	3	9	2.0	-	2.0
4	151-250	66	1.3	3	9	3.0	-	3.0
5	251-500	60	1.2	3	9	4.5	1.5	3.0
6	Above 501	50	1.0	3	9	4.5	3.0	3.0

Norms for Commercial Development

S.No	Use	Ground Coverage(in percent)	FAR	Max height (in metres)	Setback (in metres)	
					Front	Back
1	Convenience Shops	75	1.0	6	2	-
2	Local Shopping Centre	50	1.0	6	3	-
3	Community (Gram Panchayat) Shopping Centre	40	1.2	9	4.5	-

Norms for Industrial Use

S No	Plot size(in sq metres)	Ground coverage(in %)	FAR	Height	Setbacks		
					Front	Side	Back
1	100-400	60	1.2	8	3	-	3
2	400-1000	55	1.1	8	4.5	-	3
3	100-4000	50	1.0	8	6	3	3
4	Above 4000	45	0.9	8	9	3	4.5

Norms for Institutional and Community Use

S No	Plot size (in sqm)	Ground Coverage (in percent)	FAR	Height	Setbacks		
					Front	Side	Back
1	500-1500	40	1.2	9	4.5	3	3
2	1001-2000	33	1.0	9	4.5	3	4.5
3	2001-4000	30	0.9	9	6	3	4.5
4	Above 4001	25	0.9	12	9	3	6

Norms for Educational and Health Use

S No	Use	Min Plot area in Sqm	Max Ground Coverage (in %)	FAR	Max height in metres	Setback (in metres)		
						Front	Side	Back
1	Nursery/Anganwadi	1500-5000	33.3	1.0	10	4.5	3	3
2	Primary School	1500-3000	30	0.9	10	6	3	6
3	Senior Secondary	4000-10000	25	1.0	12.5	9	4.5	6
4	Nursing Home	250	35	0.7	6	3	-	3.0
5	Dispensary	251-500	33.3	1.0	9	4.5	3	3.0
6	Diagnostic Centre	Above 501	30	1.0	12	6	3	4.5

7.4.8 Proposed Land Use Plan

1. **Link the area with the potential tourist circuit**
   Nuapatna has good potential of being connected to this Tourist and Handicraft circuit which can be a handicraft cum tourist holiday tour(see Fig 4.4) lying on State Highway 65 , starting from:

1. Bhubaneswar- Capital Of Odisha
2. Cuttack- Old capital of Odisha with many handicrafts mentioned above
3. Ansupa Lake- Ecotourism Spot
4. Nuapatna- Handloom Centre
5. Maniabandha- Handloom Centre
6. Kantilo – Brass and Bell Metalwork

Since it also lies on the handicraft circuit it has enormous potential of being developed as a handicraft and heritage circuit.

7. Creating a handicraft corridor and connecting it with the existing handicraft circuit

Nuapatna should be developed as a handicraft and heritage centre lying on the 1-2 day tourist circuit wherein some homes and the guest houses at the Spinning Mill could be developed for Foreign and Indian visitors who would come for maybe a week or so to study and experience the art of handloom weaving. After being given a craft village status it will attract a lot of tourism as it can be projected as a handloom holiday as has been done in Rann of Kutch, Gujarat wherein the place is dotted with traditional houses, which are made of distinct patterns and designs and tourists take overnight camel safaris, watch birds, buy traditional products, learn skills from the artisans, or just chill along enjoying the serene beauty of the village.

It could be not only a platform to sell the handloom directly in the form of traditional sarees , lungis, gamchas and also diversified products like furnishings, fashion wear , home decorations etc. But also a platform to connect 'trained professionals who can work as tourist guides in such areas to the ones who are planning such a visit can be made. It can be collaborated with event organizing companies to plan rural festivals , village games , dance forms and kirtan sabhas which can be made exciting enough to attract the urban audience to participate as tourists.

8. Quantitative and Qualitative improvement of the existing social and physical infrastructure and housing

There is a need to increase the qualitative aspect of existing Social and physical infrastructure in terms of maintenance of educational and health infrastructure and following of norms in terms of qualified staff . There is a need of quantitative and qualitative improvement in terms of physical infrastructure like electrical, water, drainage and solid waste disposal as discussed earlier.

9. To boost the **Handloom weaving Industry** it is proposed to give Nuapatna a **Craft Village Status** with following facilities(2 acres)

-interpretation and information centre
-Guest houses (existing guest houses refurbished in the Jagannath Spinning mill)
-Exhibition ground near Bus Stand
-Raw materials bank, testing laboratory for quality control, packaging facility
-Designing and Market Research Centre for Product design and diversification
- 4 nos. of quality dying units to Weaving Cooperative Society
-Sales outlets in commercial stretch
-Centralized Training design development centre (national and international level)
-Strengthening of support infrastructure to Common Facility Centres
-Effluent treatment of waste water from tie and dye activities

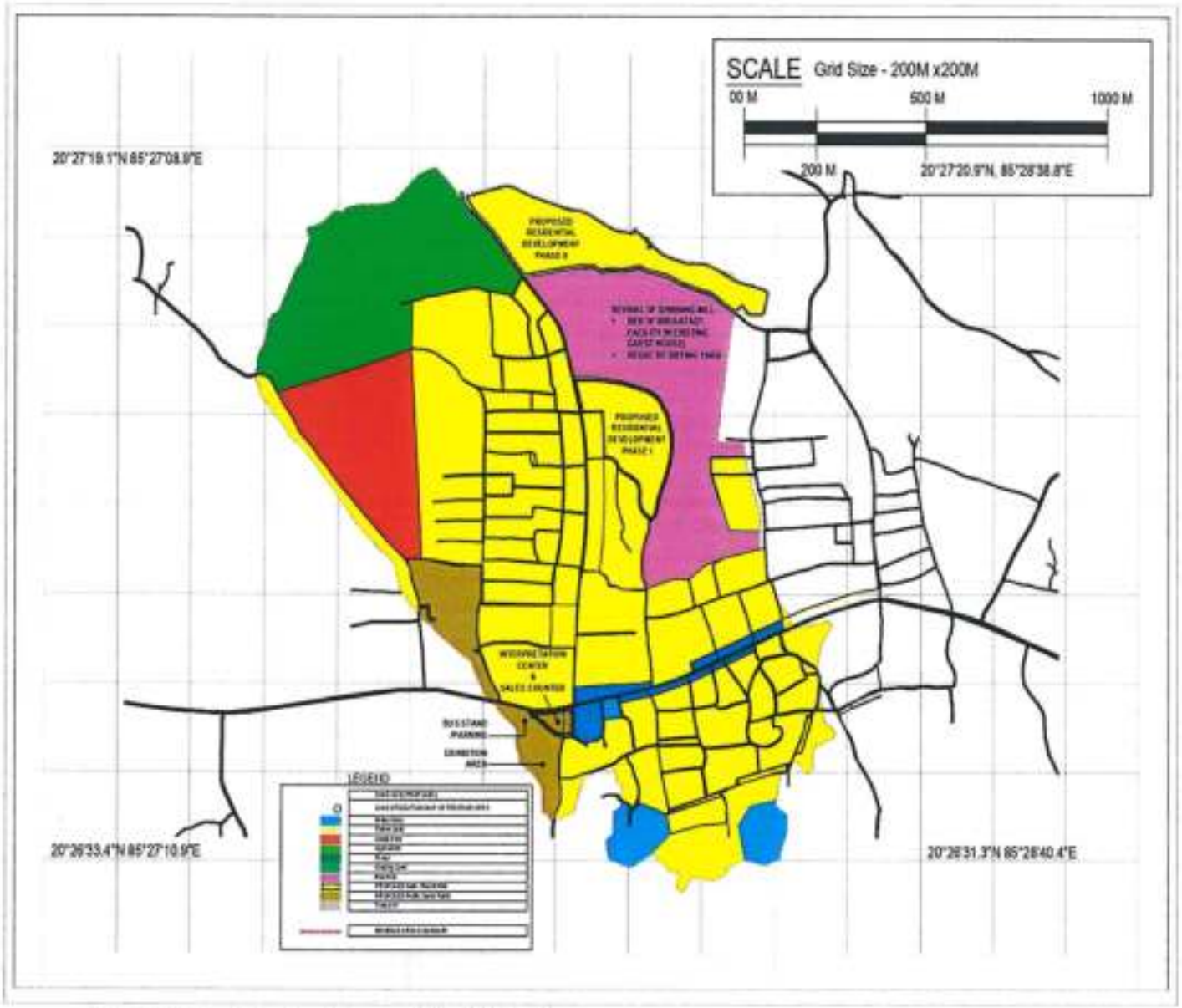


Fig 7.13 Map showing Proposed Land Use Plan

10. Development of infrastructure for capacity building.

The Jagannath Spinning Mill needs to be revived to full production capacity and all the infrastructure within it needs to be revived for e.g the drying yard as it will supply the cotton yarn necessary for the weaving process. The open areas in the public and semipublic areas should be developed with equipments for playgrounds and parks.

11. Conservation and development of existing water bodies.

The existing water bodies should be developed for water retention and for socio-religious and

recreational purposes. It should be combined with retention tanks and rainwater harvestiong to raise the ground level water.

12. **Conservation of agricultural and forest land for sustainability of the GP.**
The agricultural lands and grazing lands have been maintained at its present status to retain agriculture, dairy and poultry as a significant form of livelihood for economic sustainability and also environmental sustainability

7.4.9 Institutional Support and Governance

The GP level plans would need to be in harmony with the Block and District level Plans. The investment decisions at the local level would need to take into account the effects of Central/State Plans in that area and of neighboring localities. The cluster of GPs as rural areas and propensity to develop faster, is intended to be the primary area for GPSD local planning. Area specific development programs will help deal with the problems of regional imbalances and intra-regional variations. The GPSD planning projects would require specific technical skills and manpower resources within a framework of guidelines formulated at the local level. The GPSDP implementation by the Gram Panchayat would also need to effectively monitor with a view to ensuring that for each scheme various targets relating to time and cost, generation of services, social and economic benefits relating to the individual projects through the rural industries, agricultural, primary education, irrigation, drinking water and sanitation, rural roads connectivity, primary health or any other sector of the rural economy are achieved.
The GPSDP implementation by the Gram Panchayat would also need to effectively monitor with a view to ensuring that for each scheme various targets relating to time and cost, generation of services, social and economic benefits relating to the individual projects through the rural industries, agricultural, primary education, irrigation, drinking water and sanitation, rural roads connectivity, primary health or any other sector of the rural economy are achieved.
For the effective implementation of GPSDP, all the schemes falling in same sector needs to identified first and integrated with spatial planning.

Roads	The **Pradhan Mantri Gram Sadak Yojana** (PMGSY), as a part of a poverty alleviation strategy to provide connectivity to unconnected Habitations. Govt. of India is trying to set high and uniform technical and management standards for facilitating development and planning at the State level to ensure sustainable management of the rural roads network.
Infrastructure	**Provision of Urban Infrastructure in Urban Areas** (PURA). PURA is a strategy for Rural Development in India, proposed by former President APJ Abdul PURA focuses on providing urban infrastructure and services in rural areas. As this will prevent migration of people from rural areas to urban areas. For there to be the provision of urban facilities in rural areas under the **Rurban Mission**. There should be good quality and well-maintained rural roads facilitating improved connect. To transform the rural areas as growth engines for development to provide sustainable development and urban facilities in rural areas. This scheme aims at developing 300 clusters at village level till 2020. For selection of clusters in various states, a scientific method of cluster selection involves an objective analysis at the District, Sub District and Village level, of the demography, economy, tourism and pilgrimage significance and transportation corridor impact, based on this ministry will

	provide suggestive list to State Government, based on set principles State Government will then select clusters in District and Sub-district. Gram Panchayat Development Plan- **Sabki Yojana Sabka Vikas**-To strengthen the role of 31 lakh elected Panchayat leaders and 2.5 crores SHG Women under DAY-NRLM in effective gram sabha and to connect rural people to the mainstream while keeping in focus the principle of 'Sabka Saath Sabka Vikas'. **Sansad Adarsh Gram Yojana** (SAGY) for development in the villages which includes social development, cultural development and spread motivation among the people on social mobilization of the village communityProvide rural India with quality access to basic amenities and opportunities.The outcomes will include 100% immunization, 100% institutional delivery, reduced IMR, MMR, reduction in malnutrition among children etc.
Rural Economy	Under **Scheme of Fund for Upgradation and Regeneration of Traditional Industries' (SFURTI)**, Common Facility Centres (CFCs) are to be set up to facilitate cluster-based development Under **Scheme for Promotion of Innovation, Rural Industry and Entrepreneurship' (ASPIRE)**, Livelihood Business Incubators (LBIs) and Technology Business Incubators (TBIs) to be set up in 2019-20 to develop 75,000 entrepreneurs in agro-rural industry sectors **Pradhan Mantri Matsya Sampada Yojana (PMMSY)** to be established to robust fisheries management framework including modernisation, productivity, quality control etc.
Water and Sanitation	Under Jal Jeevan Mission, 100 per cent of rural households to have functional household tap connections by 2024 and 100 per cent of the rural habitations to have full access to safe drinking water. All rural households to have access to toilets (Individual Household Latrines) and for 100% of villages to be Open Defecation Free (ODF). **Gram Samriddhi Evam Swacchata Pakhwada**-to give a boost to development activities in rural areas. The campaign focuses on educating villagers about hygiene and cleanliness through self-help groups, Anganwadi centres and schools, and conducting training programmes **Swacchh Bharat Mission**- To bring about an improvement in the general quality of life in the rural areas, by promoting cleanliness, hygiene and eliminating open defecation. To accelerate sanitation coverage in rural areas to achieve the vision of Swachh Bharat by 2nd October 2019.
Health	The **National Rural Health Mission** (NRHM), now initiated under National Health Mission, is a Central government's Mission which aims to provide accessible, affordable and accountable quality health services even to the poorest households of the rural areas **Prime Minister Arogya Yojana**- The objectives of the scheme are to reduce out of pocket hospitalisation expenses, fulfil unmet needs and improve access of identified families to quality inpatient care and surgeries **Sansad Adarsh Gram Yojana** (SAGY) for development in the villages which includes social development, cultural development and spread motivation among the people on social mobilization of the village communityProvide rural India with quality access to basic amenities and opportunities.The outcomes will include 100% immunization, 100%

REFERENCES

1. Census of India. (2011). *Census Digital Library*. Retrieved from Census of India: https://censusindia.gov.in/DigitalLibrary/Archive_home.aspx
2. DCO, D. C. (2011). *District Census Handbook Cuttack Part A.* Bhubaneswar: District Census Operations.
3. DCO, D. o. (2011). *District Census Handbook Cuttack Part B.* Bhubaneswar: Directorate of Census Operations.
4. Department of Town & Country Planning, L. S. (2007-2012). *Integrated District Development Plan, Local Development Plan.* Government of Kerala.
5. Ministry of Panchayati Raj, M. (2016). *Rural Area Development Plan Formulation and Implementation (RADPFI) Guidelines.* MoPR.
6. Ministry of Rural development (MoRD), G. o. (2016). *Shyam Prasad Mukherji Rurban Misison, Integrated Cluster Action Plan (ICAP).* Government of India.
7. Planning Commission of India. (n.d.). *Manual for Integrated District Planning.* Planning Commission of India.
8. Handloom,Textiles and Handicraft Department. (1980). *Handicrafts Draft Policy(2018).*Government of Odisha.

ANNEXURE 1-MAPS

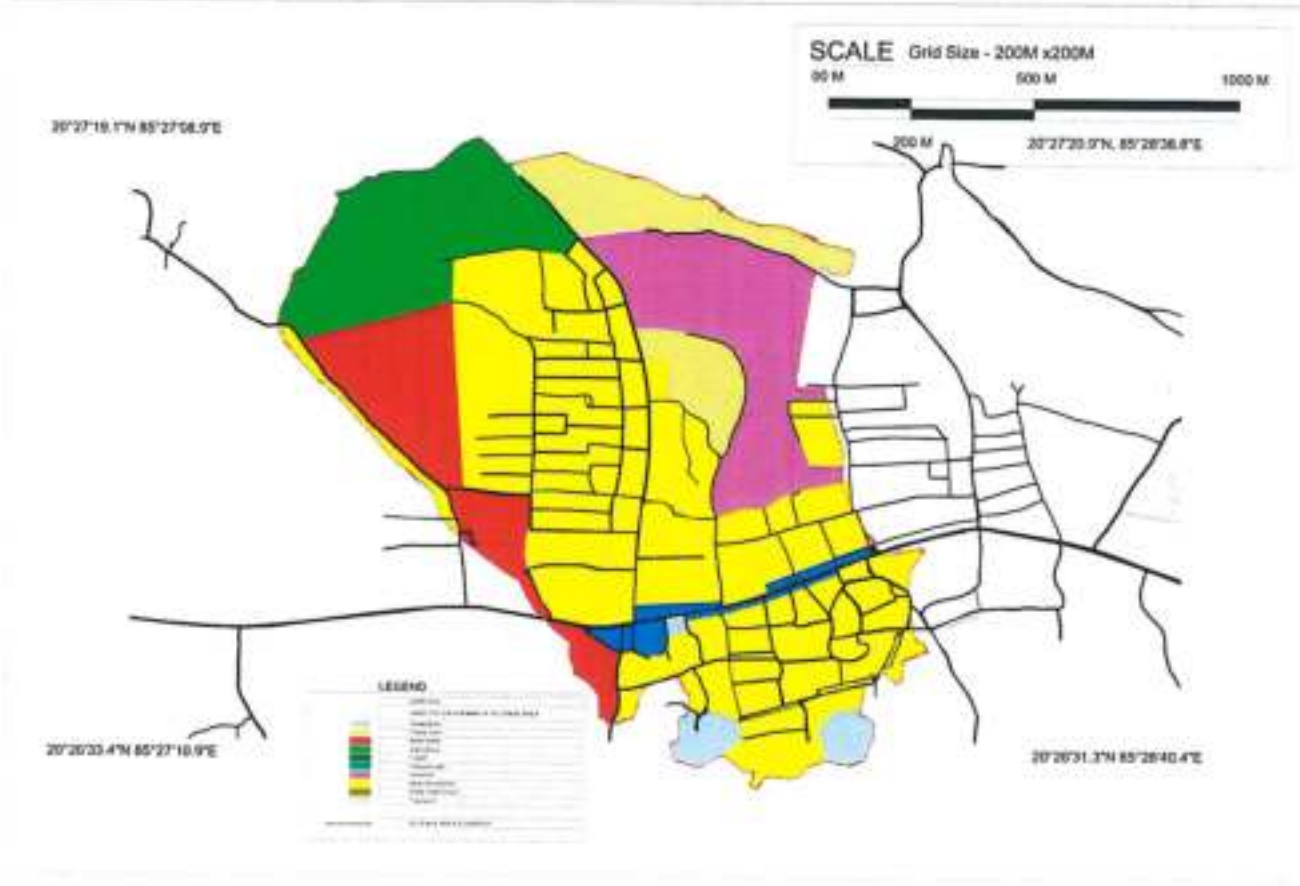


Fig – 6.1 Existing land use map which has been obtained by overlaying the RI Tehsil map with current uses (Source: Primary)

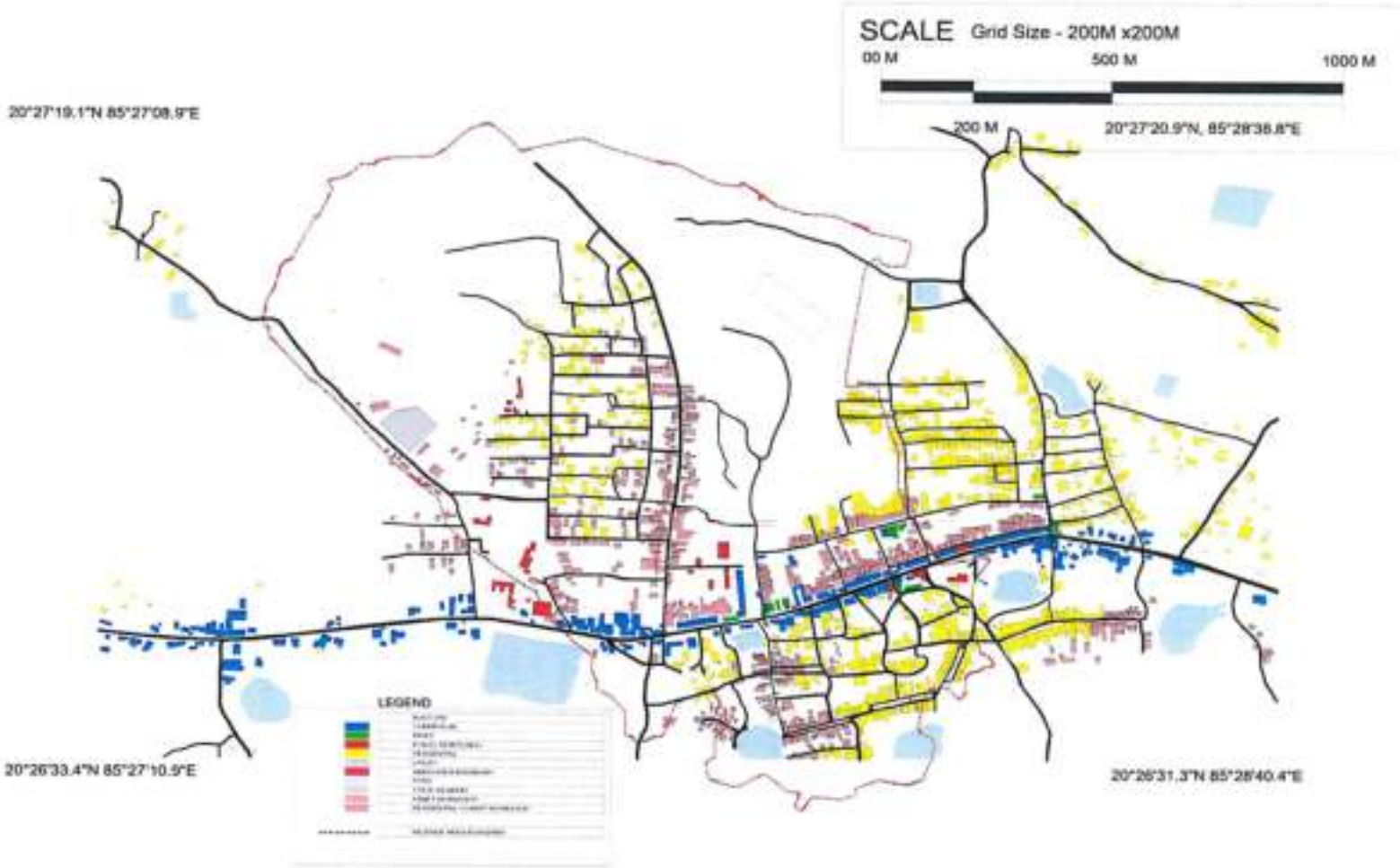


Fig 6.2 Existing Built Use Map

Fig 6.4 Map showing the distribution of HousingType (Source:Primary)

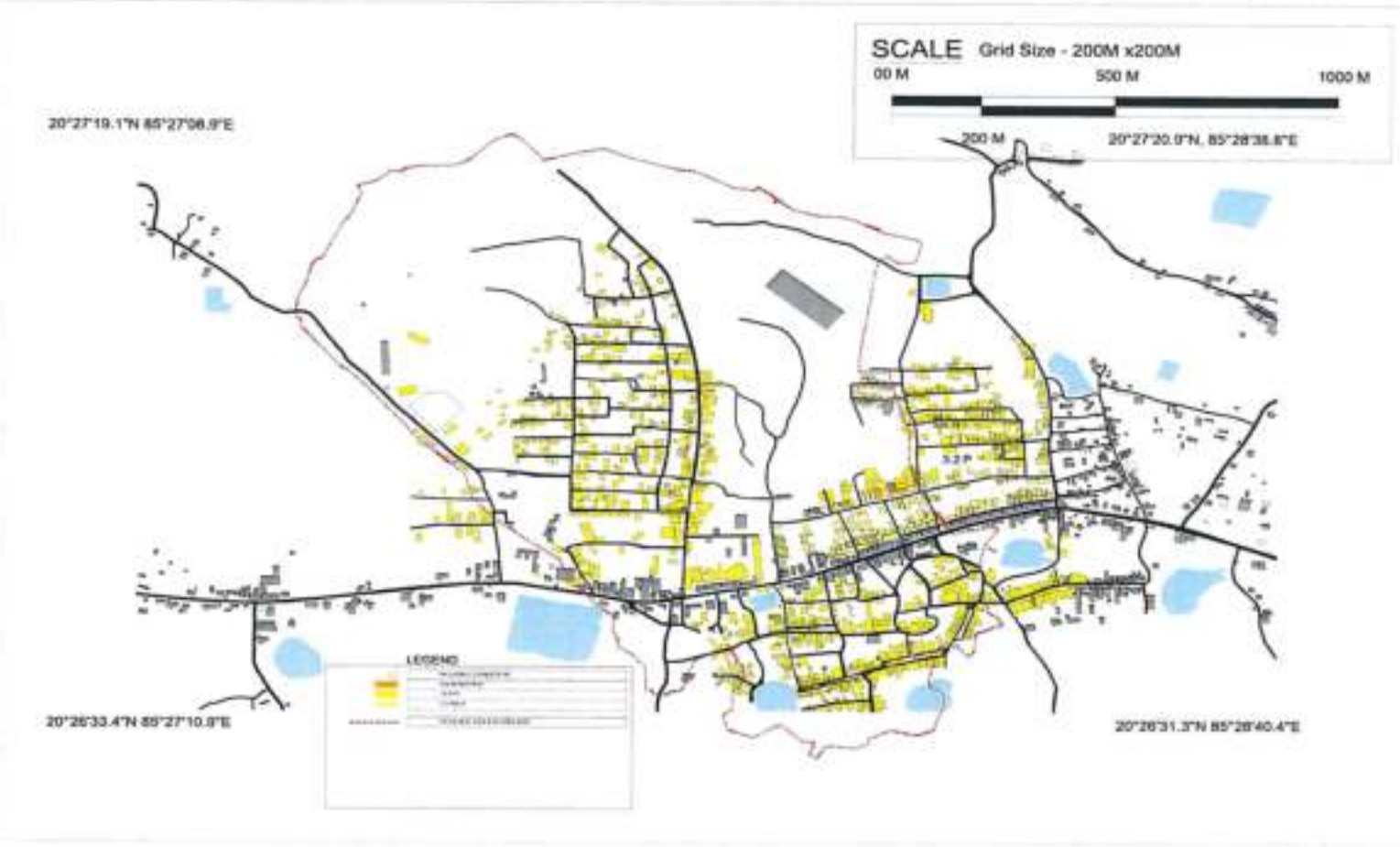


Fig 6.6 Map showing distribution of houses as per housing condition(Primary Source)

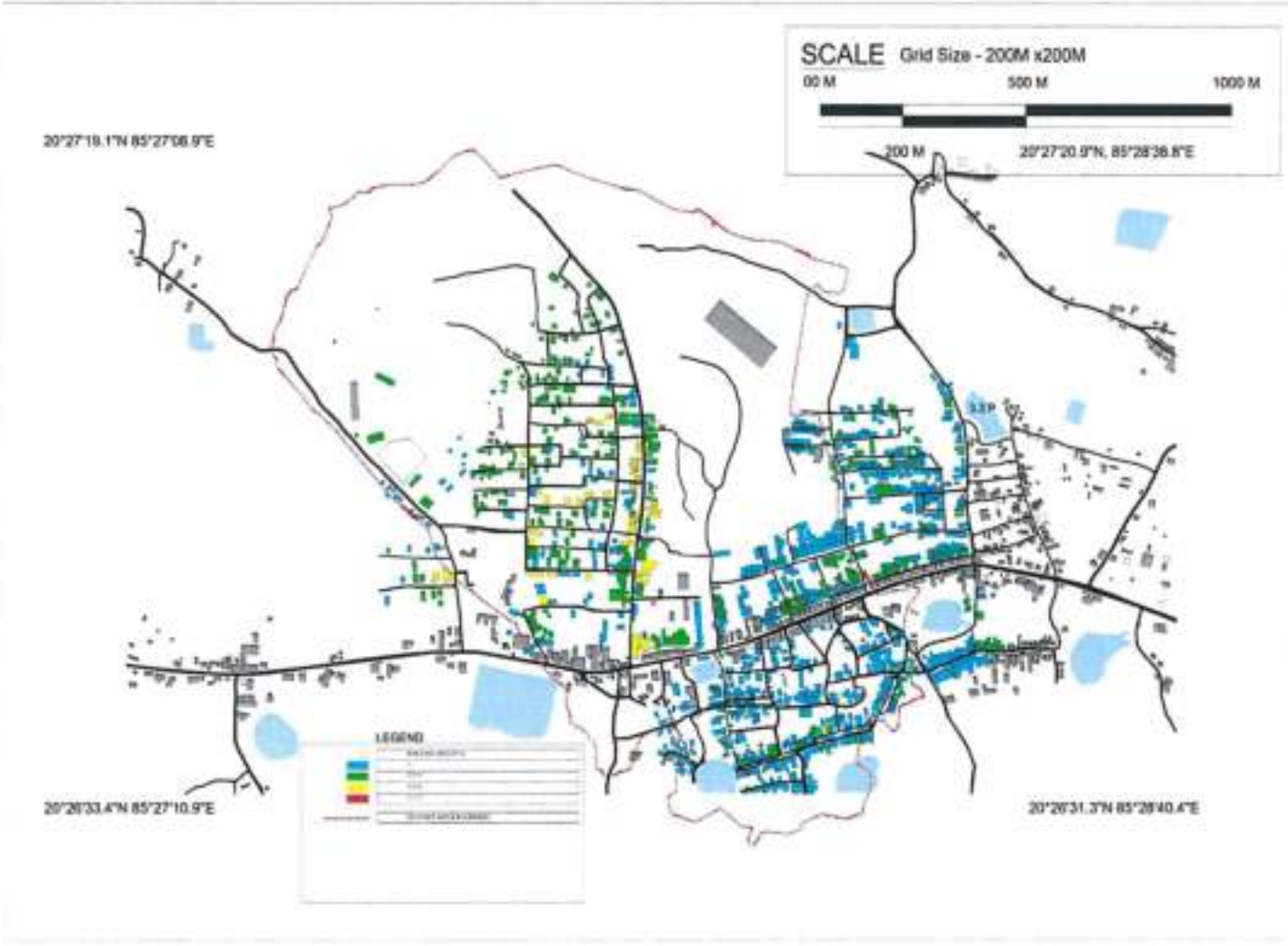


Fig 6.8- Map showing distribution of houses as per height of structure(Primary Source)

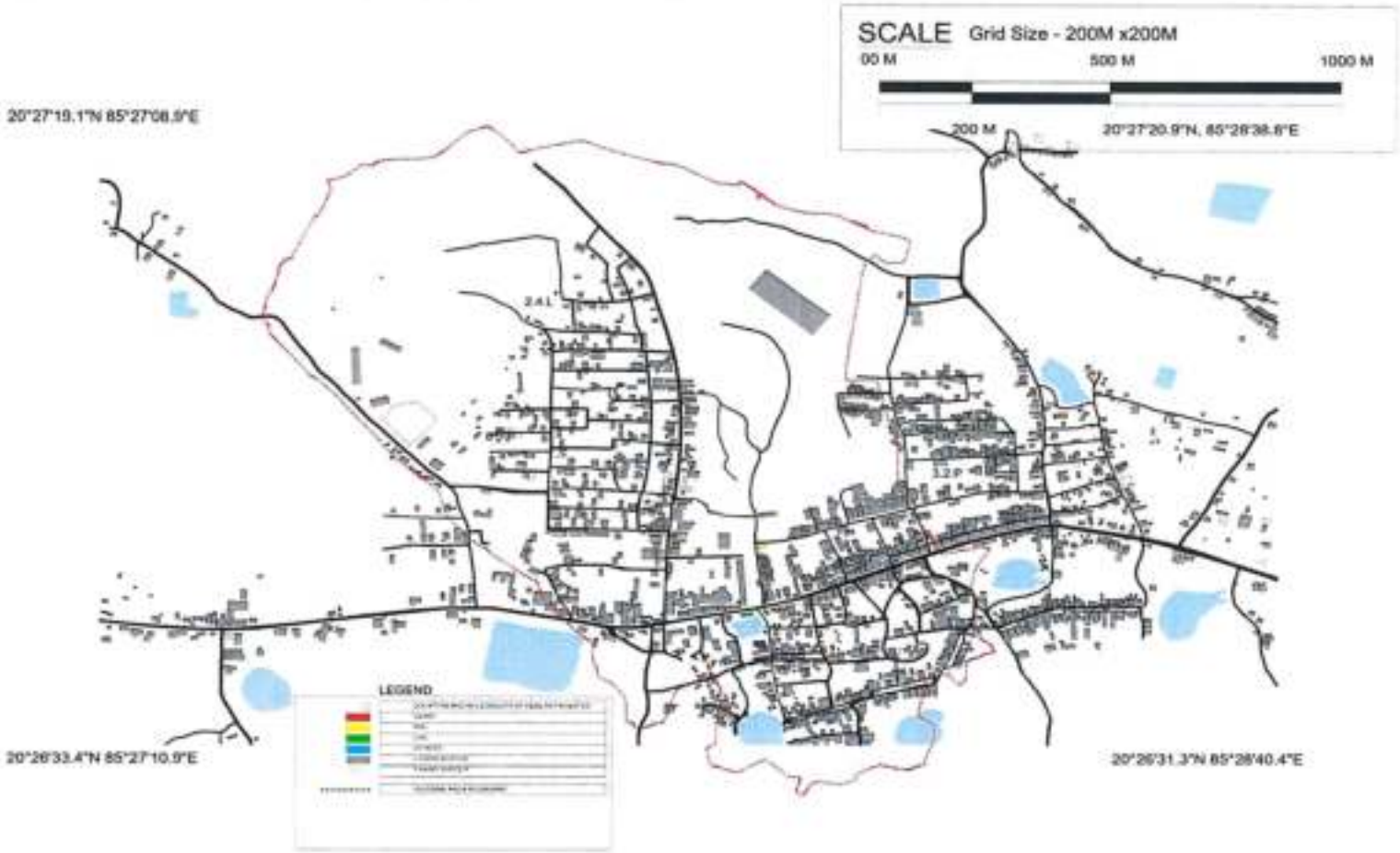


Fig 6.13 Map showing location of health facilities(Primary Source)

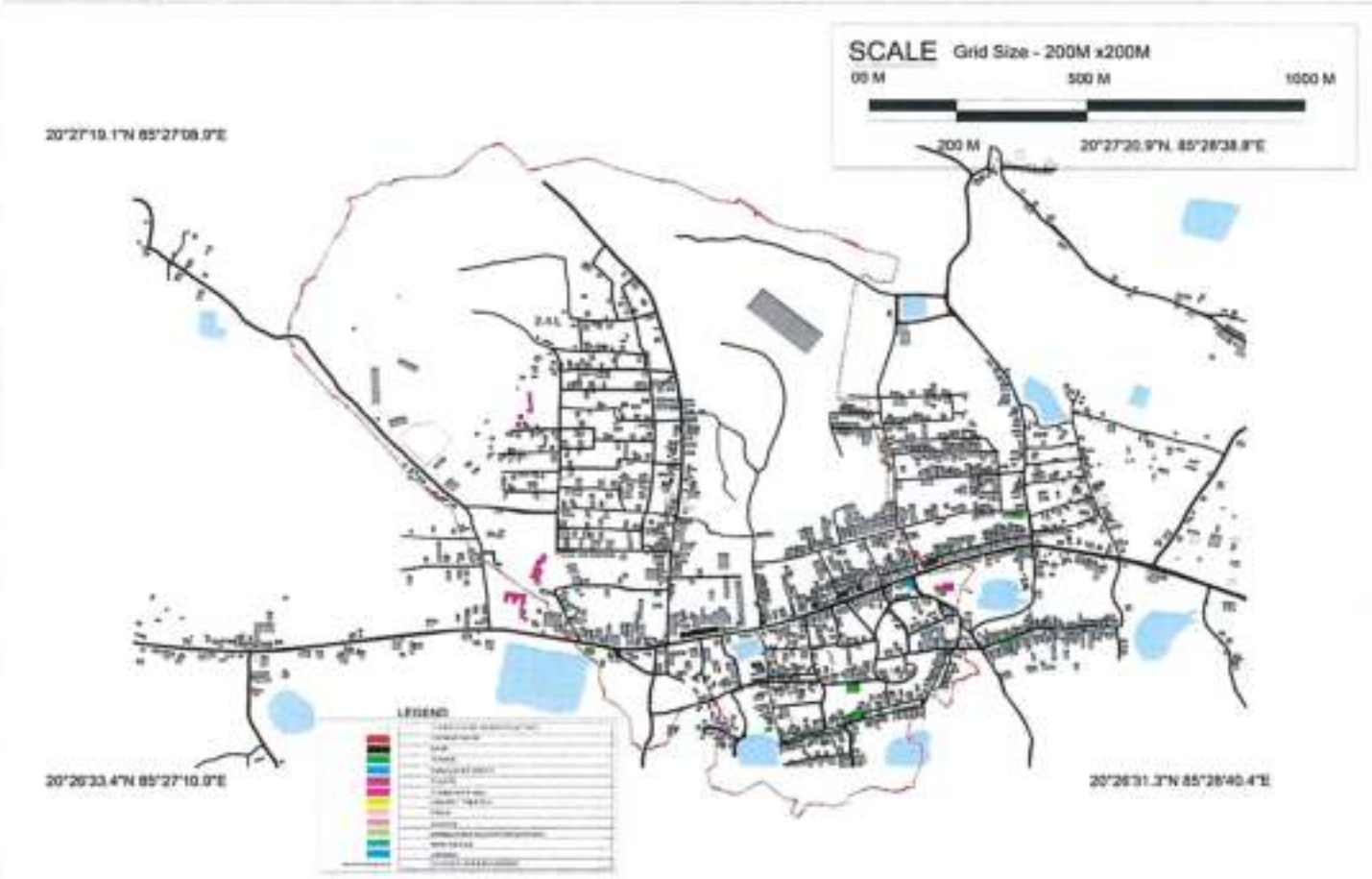


Fig 6.14 Map showing location of other socio-cultural facilities(Primary Source)

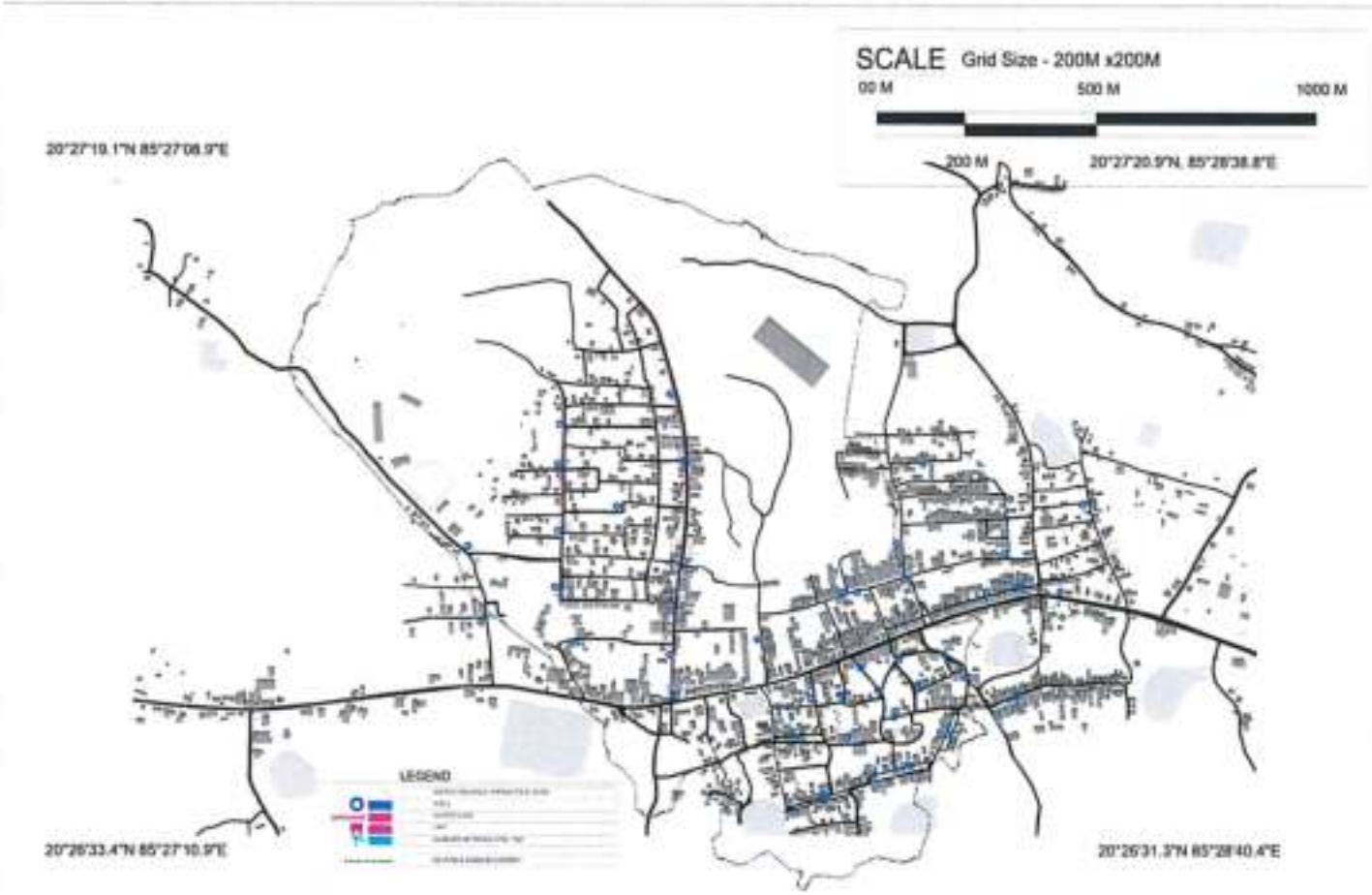


Fig 6.17 Map showing location of water related infrastructure(primary)

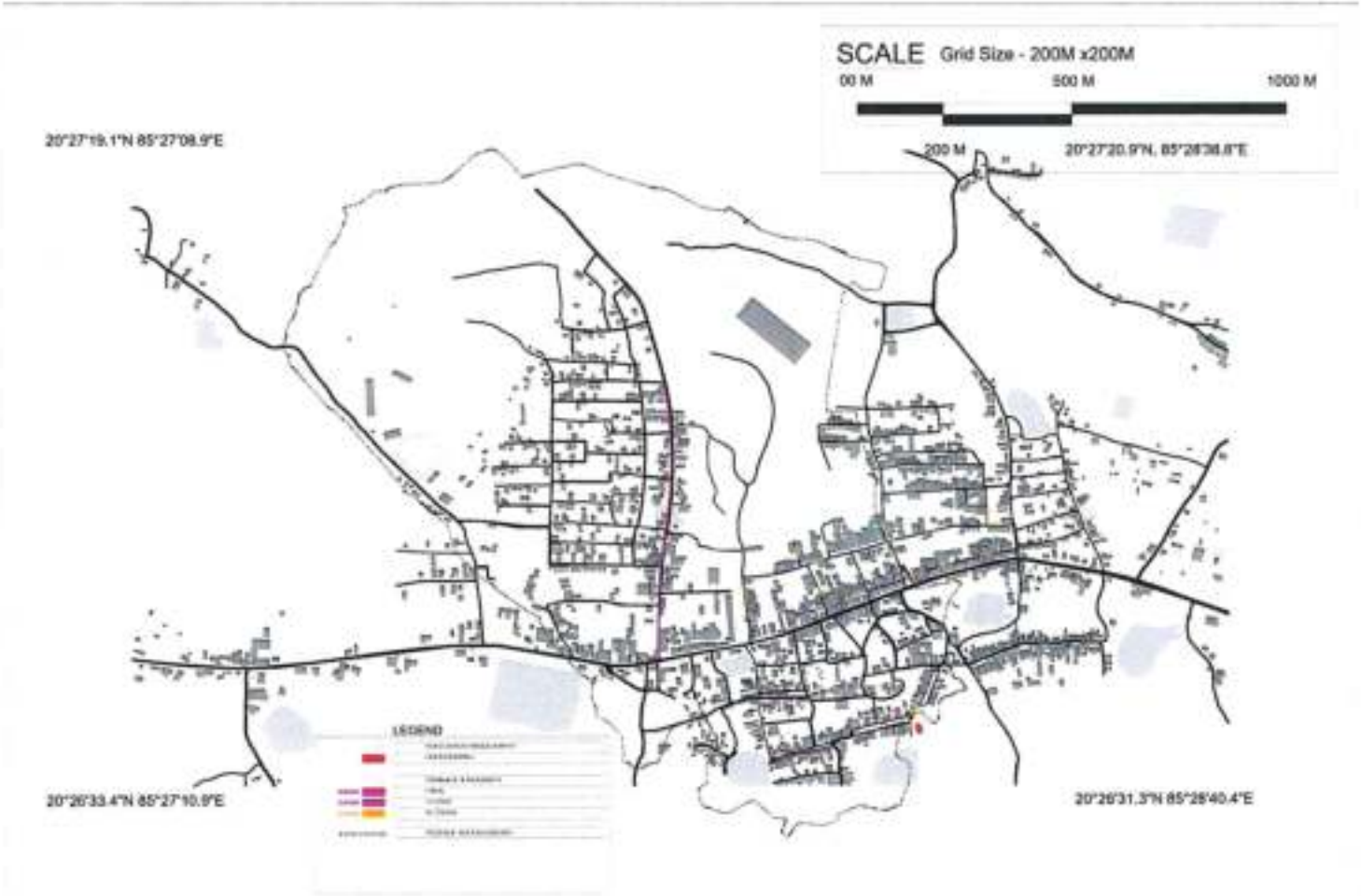


Fig 6.18 Map showing Drainage and Sewerage and Solid Waste Network (Census 2011)

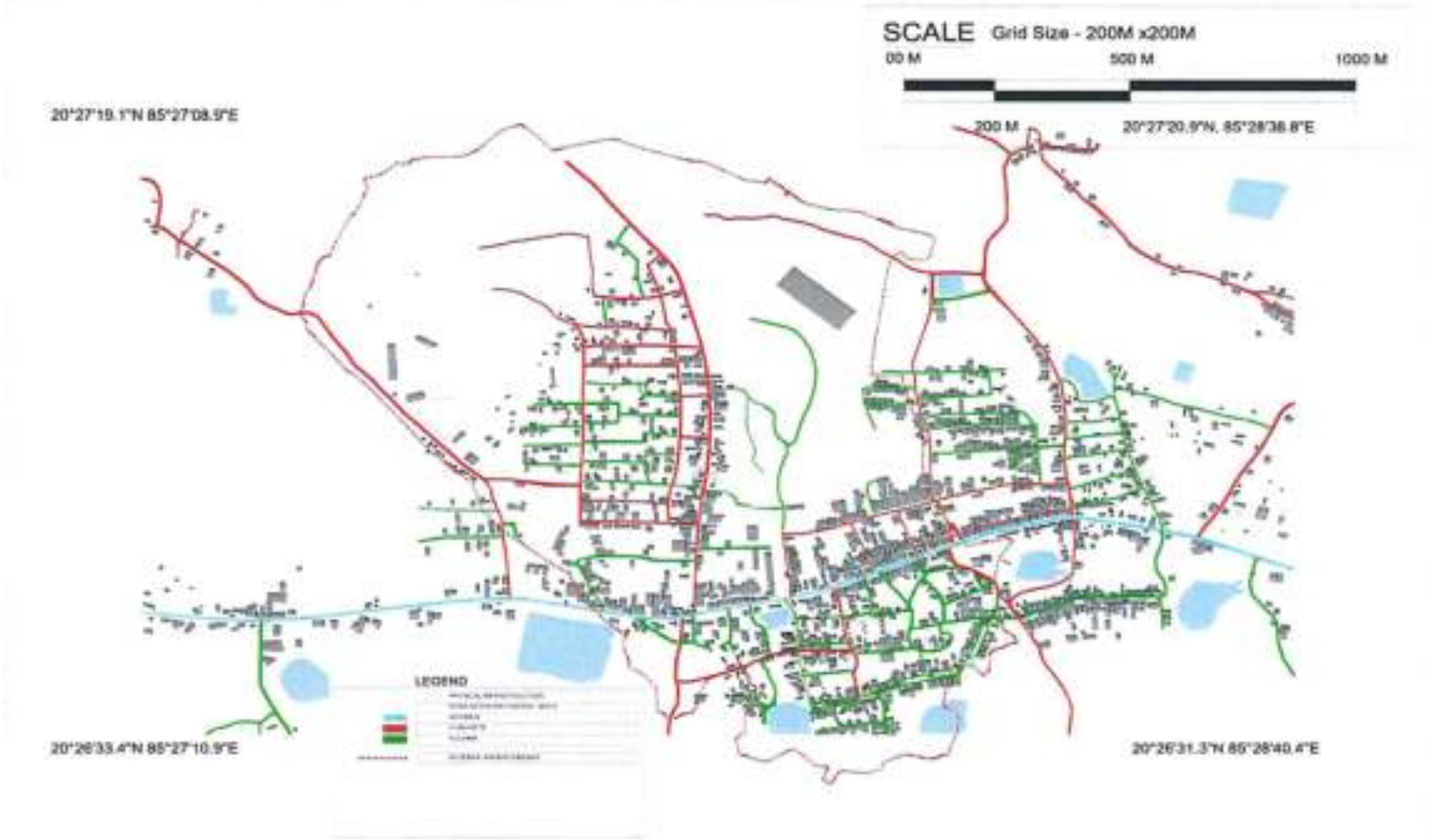


Fig 6.21 Map showing Road Network

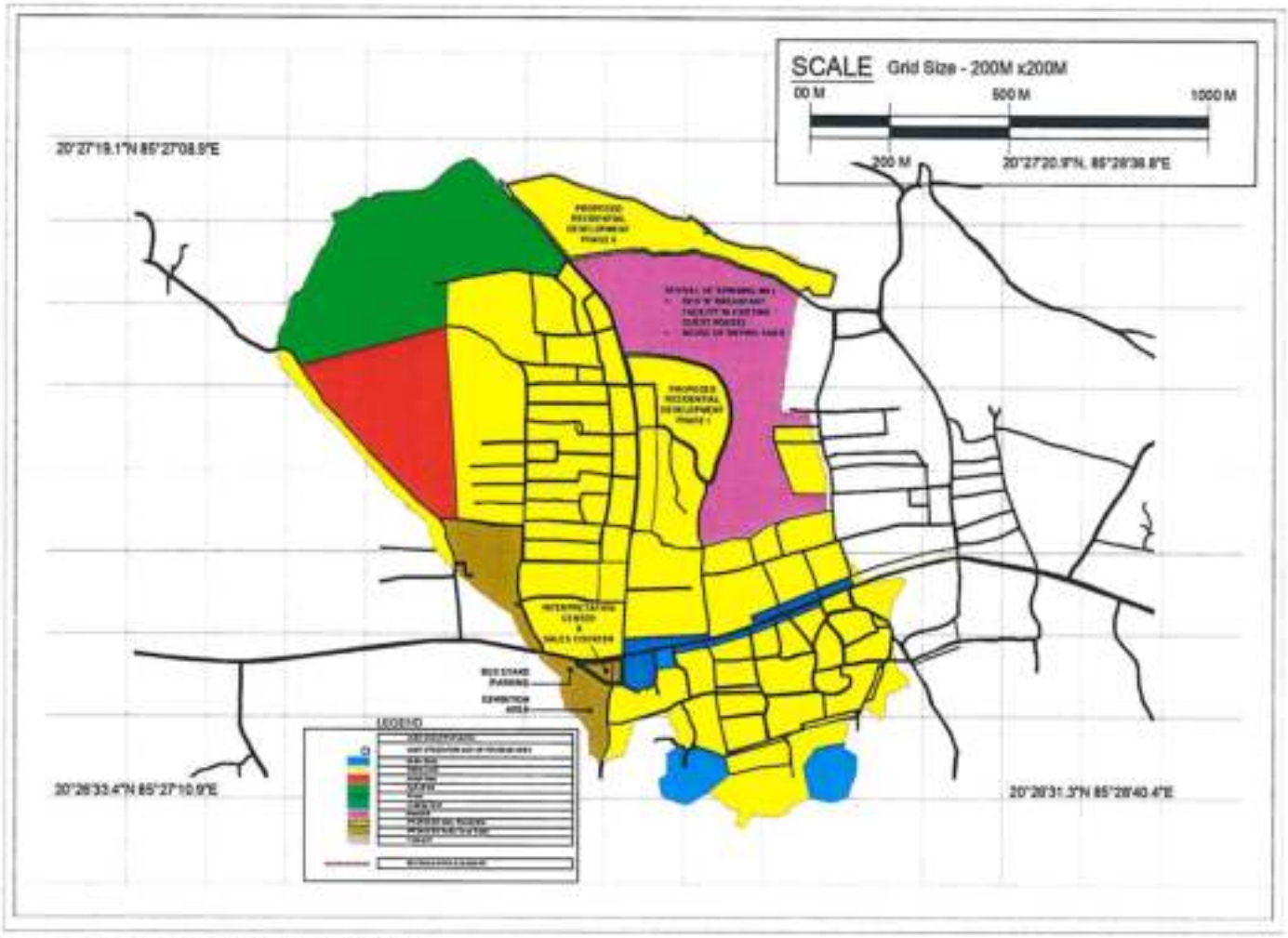


Fig 7.5- Proposed Land Use plan till 2051