Department of Architecture
Faculty of Technology & Engineering
MSU Baroda

EXCRESCENCE – OUT GROWTH
STUDY OF VAPI, GUJARAT

SUBMITTED BY: **OM DESAI** (18)
MURP II - 4th SEM

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INTRODUCTION

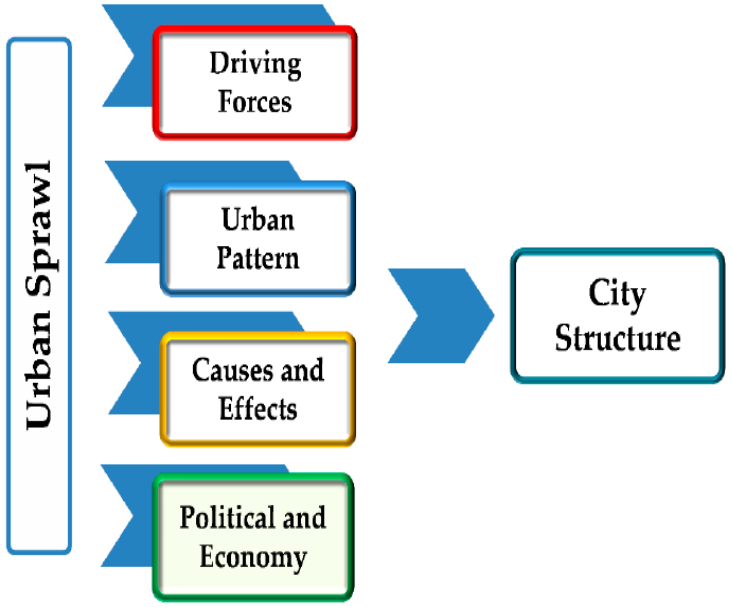
- Sprawl is the spreading out of a city and its suburbs over more and more rural land at the periphery of an urban area. This involves the conversion of open space (rural land) into built-up, developed land over time.
- Sprawl is also considered to be an unplanned outgrowth of urban areas along the periphery of the cities, along highways, and along the road connecting city.
- Urban sprawl refers to the outgrowth of urban areas caused by uncontrolled, uncoordinated and unplanned urban growth.
- Cities often experience growth either physically, by population, or by a combination of both. Urban sprawl is much more complicated because it may or may not qualify as urban growth. How a city grows can create the appearance of sprawl.

CAUSES

- Lower Land Rates
- The Rise in Standard of Living
- Lack of Urban Planning
- Lower House Tax Rates
- The Rise in Population Growth
- Consumer Preferences

EFFECTS OF URBAN SPRAWL

- Increase in Public Expenditure
- Increased Traffic
- Health Issues
- Sanitation Issues
- Environmental Issues
- Impact on Social Lives



LITERATURE REVIEW

RESEARCH PAPER	LEARNING OF STUDY
1. **A solution to urban sprawl: Management of urban regeneration by smart growth.** Sag, Neslihan; Karaman, Aykut. Published By: European Regional Science Association (ERSA), 2014.	• The study here states that we need to focus on city center more in order to attract the crowd to reside with land that is utilized but he failed to mention the problem of over-crowding, traffic conjunction, poor dwelling issue that can be caused.
2. **Estimating the impacts of urban planning concepts on reducing urban sprawl using certain spatial indicators (ULAANBAATAR - MONGOLIA)** Bolormaa Batsuuri ,Christine Fürst, Buyandelger Myagmarsuren.	• Talking on having compact city, turned out to have vertical growth and reduction in green space around the city, which tend the individual to migrate to the suburbs of the city, but although the sprawl could slowed down if the policies of development made feasible to the livelihood of the individuals.
3. **Evolving a Planning Strategy for Managing Urban Sprawl in Nigeria** Julius Olujimi.	• Leniency on naturally available resources, and a good strategy of usage of it to the cities at an optimum level and this is advocated by the people itself is a good gesture by the government collaborating with the people and planning.
4. **The Management of Urban Sprawl by Applying an Urban Edge Strategy** Jacques Dirk Jansen van Rensburg & Maléne M. Campbell. Published By: Springer,2014.	• create a compact, integrated, sustainable town for a sustainable future for all the residents of such a town. Urban edge study should be approached holistically by various studies environmental, socio-economic and densification

LITERATURE REVIEW

RESEARCH PAPER	LEARNING OF STUDY
5. **Urban Sprawl and its Smart Management** Mani Dhingra. Published By: International Journal of Research (IJR), 2014.	• Brownfield redevelopment or the reuse of existing land within the city and concentrating growth. • Use of improved mass public transport systems. • Development and use of better and most efficient land use policies.
6. **Halting Urban Sprawl: Smart Growth in Vancouver and Seattle** David Fox. Published By: Boston College International and Comparative Law Review, 2010.	• comprehensive plans at the municipal and regional levels have bound Seattle to focus development in urbanized areas, provide its residents with better transportation options, and it will also facilitate the development of functional neighborhoods.
7. **Urban Sprawl on Agricultural Land (Literature Survey of Causes, Effects, Relationship with Land Use Planning and Environment)** Case Study from Jordan (Shihan Municipality Areas)	• The research has a very acute type of perspective to just built and develop, no specification on green zones or resource allocation.
8. **Evaluating Strategies to Protect Open Space and Slow Sprawl in the Philadelphia Region** Paul Lumia. Published By: Scholarly Commons, 2008.	• The paper states to uses the natural resources in a very efficient way as it is the thing that we have very limited and should not be exploited. • The revitalization of urban and suburb will help redaction in cost of services and slow down the sprawl.

LITERATURE REVIEW

RESEARCH PAPER	LEARNING OF STUDY
9. **Policies and issues concerning urban sprawl and compact development paradigm adoption in greater Kuala Lumpur, Malaysia** By: Malik Asghar Naeema. Published By: Malaysia Sustainable Cities Program, Working Paper Series, 2016.	• Here the major role is played by the authorities, where they have been given a policies , but the lack in coordination of the relevant department obstructed in making the policies work at the ground level, hence policies can be implemented without coordination of authorities.
10. **Halting Urban Sprawl: Smart Growth in Vancouver and Seattle** David Fox. Published By: Boston College International and Comparative Law Review, 2010.	• Comprehensive plans at the municipal and regional levels have bound Seattle to focus development in urbanized areas, provide its residents with better transportation options, and it will also facilitate the development of functional neighborhoods.
11. **Urban Sprawl and its Periphery- A Case Study of Guwahati city and its Periphery in Assam (In North-East India)** Dr. Brajendra Saikia.	• The paper has a strong point to make that due to insufficient amenities allocation to the individuals the people are migrating to Guwahati and the city is overcrowding which is causing urban sprawl.
12. **Theoretical Review Effect and Solution of Urban Sprawl** Darmansjah Tjahja Prakasa, Bambang Soemardiono, Ima Defiana. Published By: The International Journal of Engineering and Science (IJES), 2018	• Here the study is taking out some things good out of the urbanization that is taking place, but the paper is not stating specifically what better things can be produced.

LITERATURE REVIEW

RESEARCH PAPER	LEARNING OF STUDY
13. **The effects of transportation system on the urban sprawl process for the city of Iasi, Romania** C. Iațu, A. Munteanu, M. Boghinciuc, R. Cernescu & B. Ibănescu.	• Having public transport and increase in walkable neighborhood is a very good strategy and having mix use is also a good idea, But including neighborhood that have the eye-on street concept be Jane Jacob would have been good strategy to be used with these methods effective.
14. **Designing the Mitigation Model of Urban Sprawl Potential Impact in Suburban Denpasar, Bali.** Putu Indra Christiawan. Published By: Journal of Physics: Conference Series, 2019.	• Here the study states to do planning with the people, which in order is a very good strategy of planning as there can be spread or awareness and the solutions can be implemented rapidly.
15. **About Urban Sprawl: A Case Study of Ahmedabad City** *By: Rahil M. Avadia, Prof. Ashok C. Patel.* *Published By: International Research Journal of Engineering and Technology (IRJET), 2018*	• The remedies given in this paper cannot be applied on the full city as different regions in Ahmedabad have different issues addressing to different by a single interpretation is not possible.
16. **Study of Urban Sprawl and its Social and Environmental Impacts on Urban Society in Latifabad Town, Hyderabad, Pakistan** Saima Allah Yar. Published by: Journal of Civil & Environmental Engineering,2017.	• Latifabad is a town where there is shortage of open spaces and traffic conjunction, they introduce the concept of smart planning but the social point of view is missing, which is they need to plan with the people taking in the major stake holders in advocating the initiative.

LITERATURE REVIEW

RESEARCH PAPER	LEARNING OF STUDY
21. **Urban sprawl: A case study of Shenzhen, China** QI Lei, LU Bin. Published by: 44th ISOCARP Congress 2008.	• Balancing the mosaic of ecology and urbanization as a whole can be a solution to enhance the quality of living style of Shenzhen. Establishing suitable development policies would strengthen the associated community as well as the planning system.
22. **Urbanization and Urban Sprawl Issues in City Structure: A Case of the Sulaymaniah Iraqi Kurdistan Region** Sivan Hisham Al Jarah , Bo Zhou, Rebaz Jalil Abdullah, Yawen Lu and Wenting Yu. Article in: Sustainability, 2019.	• Rapid city development and urbanization leads to degrading rural cultivable lands. Thus it is highly critical to provide adequate and affordable terms of development which can cater a bridge between shrinking rural area and expanding urban sprawl.
23. **Causes, results and methods of controlling urban sprawl** By: S. Habibi , N. Asadi. Published by: Elsevier Ltd., 2011.	• Development of infrastructure tends to rapid decrease in agricultural land, inclined ratio of migration, pollution and congestion. Thus, reducing these effects and balancing urban sprawl should be a motto for efficient and better management of core regions.
24. **City Growth with Urban Sprawl and Problems of Management for Sustainable Urbanization** *By: Golam Rahman, Deanna Alam and Sirajul Islam.* *Published by: 44th ISOCARP Congress 2008.*	• Bifurcation of various zones within the urban areas, jurisdictional and legal policies which can boost improving urban greens. Developing nodes which can protect greenbelts and enhance quality of life.

NEED OF THE STUDY

- UNMANAGED URBAN EXPANSION INCREASES THE COSTS OF SERVICE PROVISION, DEEPENS SPATIAL INEQUITIES, AND IMPOSES HEAVY ECONOMIC AND ENVIRONMENTAL BURDENS.
- CITIES WITH RAPID OUTWARD EXPANSION ARE OFTEN CHALLENGED BY DISTORTED LAND MARKETS, DEFICIENT SERVICES IN GROWING AREAS, AND DIS-JOINTED INFORMAL EXPANSION.
- URBAN SPRAWL HAS RESULTED IN LOSS OF PRODUCTIVE AGRICULTURAL LANDS, OPEN GREEN SPACES AND LOSS OF SURFACE WATER BODIES. HENCE, THERE IS A DIRE NEED TO STUDY, UNDERSTAND AND QUANTIFY THE URBAN SPRAWL.

VISION

- PERCEIVE, REGULATE AND CATER THE SPRAWL.

AIM

- TO PROVIDE A SET OF STRATEGIES TO CATER AND REGULATE THE OUTGROWTH OF THE VAPI TOWN IN ORDER TO MINIMIZE OR SLOW DOWN THE HAPHAZARD DEVELOPMENT OF THE PERIPHERAL AREA OF THE TOWN.

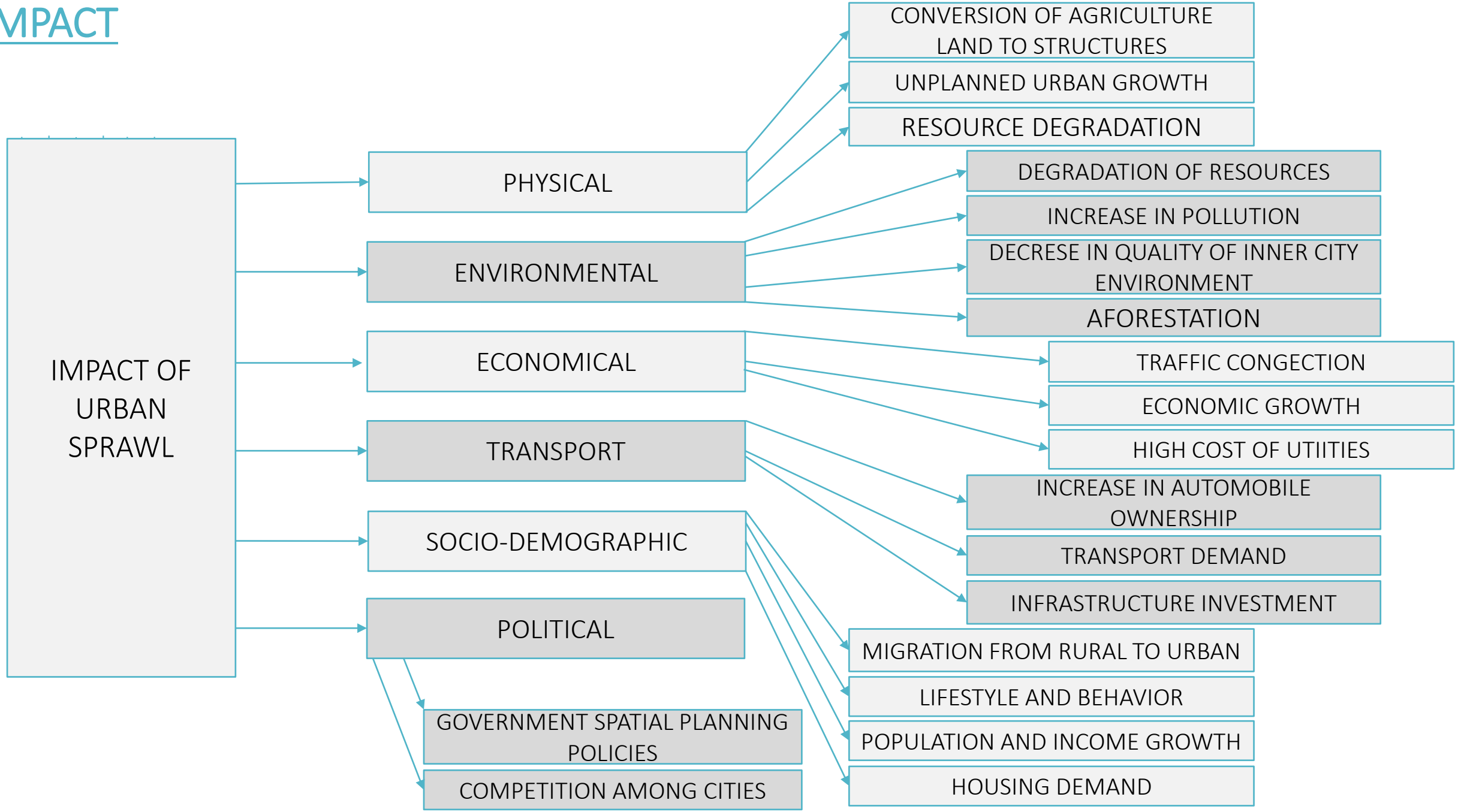
OBJECTIVE

- TO EVOLVE APPROPRIATE METRICS TO CHARACTERIZE THE URBAN SPRAWL.
- TO OBSERVE PHYSICAL GROWTH OF THE AREA SINCE 1961.
- TO UNDERSTAND THE IMPACT OF UNPLANNED GROWTH ON THE RESOURCES.
- TO SUGGEST STRATEGIC MEASURES FOR CONTROLLING THE SPRAWL.

RESEARCH QUESTION

- CAN URBAN SPRAWL BE MANAGED, CONTROL AND CATERED WITH THE HELP OF PLANNING STRATEGIES?

IMPACT


IMPACT OF URBAN SPRAWL
PHYSICAL
ENVIRONMENTAL
ECONOMICAL
TRANSPORT
SOCIO-DEMOGRAPHIC
POLITICAL
CONVERSION OF AGRICULTURE LAND TO STRUCTURES
UNPLANNED URBAN GROWTH
RESOURCE DEGRADATION
DEGRADATION OF RESOURCES
INCREASE IN POLLUTION
DECRESE IN QUALITY OF INNER CITY ENVIRONMENT
AFORESTATION
TRAFFIC CONGECTION
ECONOMIC GROWTH
HIGH COST OF UTIITIES
INCREASE IN AUTOMOBILE OWNERSHIP
TRANSPORT DEMAND
INFRASTRUCTURE INVESTMENT
MIGRATION FROM RURAL TO URBAN
LIFESTYLE AND BEHAVIOR
POPULATION AND INCOME GROWTH
HOUSING DEMAND
GOVERNMENT SPATIAL PLANNING POLICIES
COMPETITION AMONG CITIES

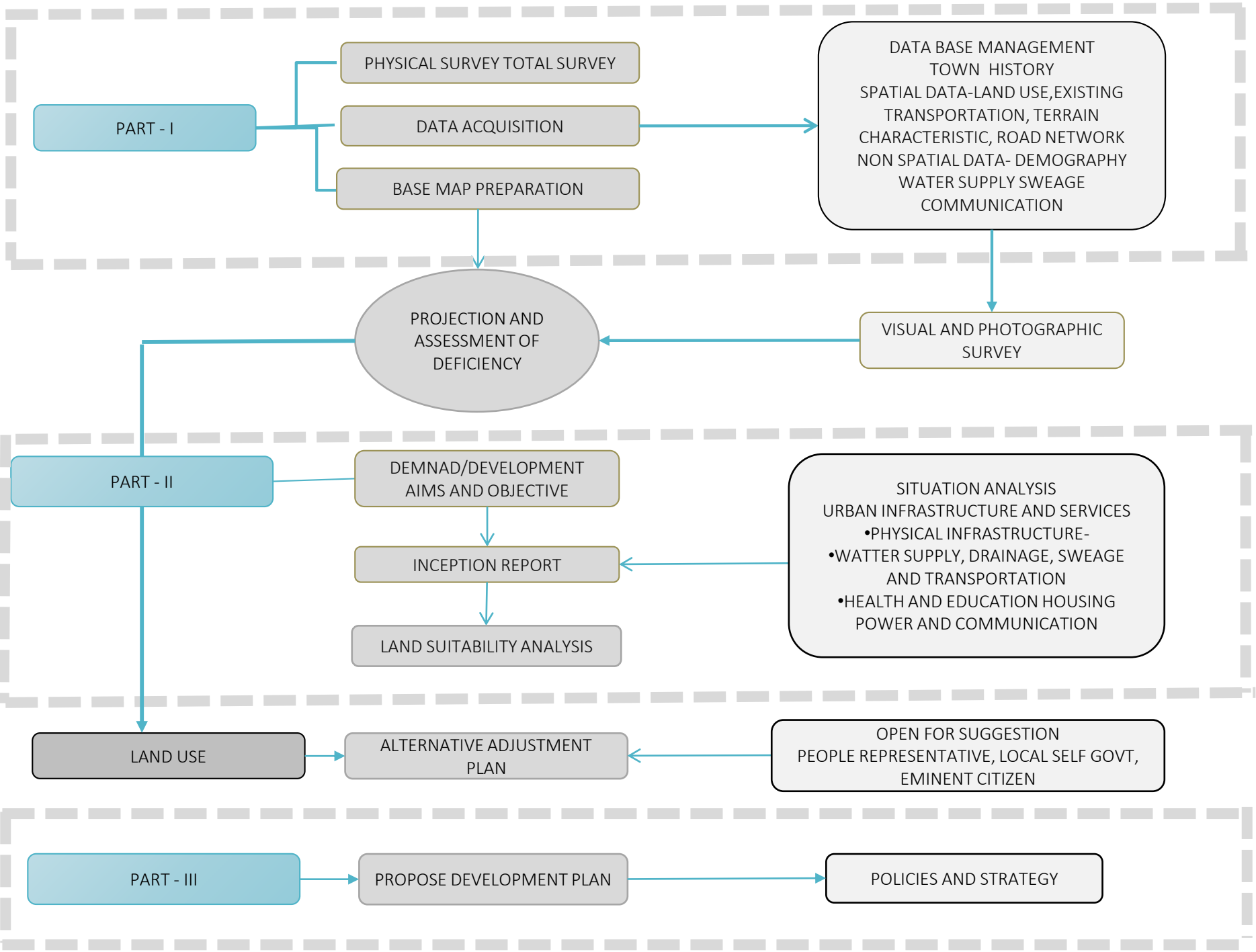
FOCUS AREA OF STUDY

PRIMARY	SECONDARY
PHYSICAL	POLITICAL
SOCIO-DEMOGRAPHIC	ENVIRONMENTAL
TRANSPORT	
ECONOMICAL	

FEASIBLITY

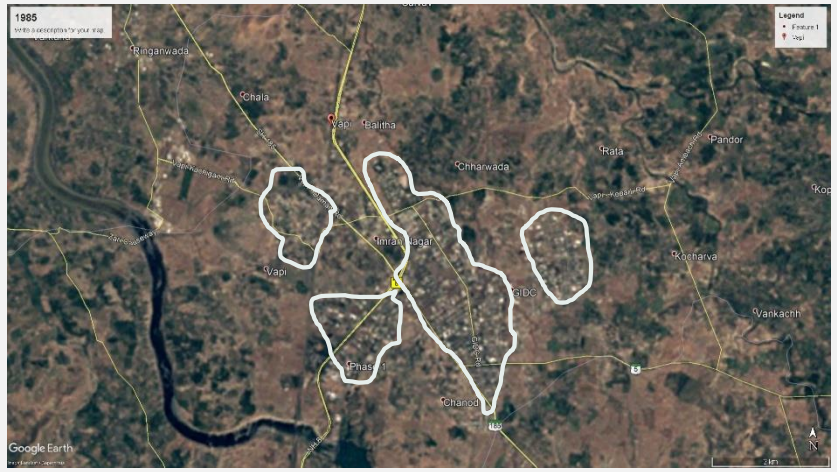
BENEFITS	DRAWBACKS	INFERENCES
• Development of infrastructure • Increase in income. • Increase in mass transport. • Better opportunities. • Life-style and behavior. • Housing Demand.	•Cost of resource allocation. •Travel time •Pollution •Vehicular density (traffic congestion). •Unmanageable services and utilities. •Multiple governance and policies.	• Sprawl cannot be catered with all the facilities as core areas due to cost of services and utilities allocation. • Scope of provision of mass transit system. • Environmental depilation, afforestation and loss of rural agricultural land. • Increase in income, hence high tax collection resulting to upgraded amenities and services.

FRAME WORK


PART - I
PHYSICAL SURVEY TOTAL SURVEY
DATA ACQUISITION
BASE MAP PREPARATION
DATA BASE MANAGEMENT
TOWN HISTORY
SPATIAL DATA-LAND USE,EXISTING TRANSPORTATION, TERRAIN CHARACTERISTIC, ROAD NETWORK
NON SPATIAL DATA- DEMOGRAPHY WATER SUPPLY SWEAGE COMMUNICATION
PROJECTION AND ASSESSMENT OF DEFICIENCY
VISUAL AND PHOTOGRAPHIC SURVEY
PART - II
DEMNAD/DEVELOPMENT AIMS AND OBJECTIVE
INCEPTION REPORT
LAND SUITABILITY ANALYSIS
SITUATION ANALYSIS
URBAN INFRASTRUCTURE AND SERVICES
•PHYSICAL INFRASTRUCTURE-
•WATTER SUPPLY, DRAINAGE, SWEAGE AND TRANSPORTATION
•HEALTH AND EDUCATION HOUSING POWER AND COMMUNICATION
LAND USE
ALTERNATIVE ADJUSTMENT PLAN
OPEN FOR SUGGESTION
PEOPLE REPRESENTATIVE, LOCAL SELF GOVT, EMINENT CITIZEN
PART - III
PROPOSE DEVELOPMENT PLAN
POLICIES AND STRATEGY

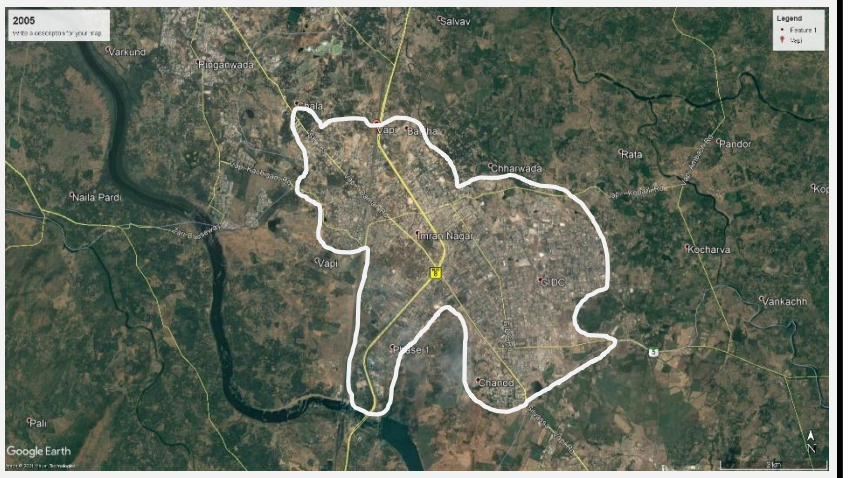
PHYSICAL GROWTH OF VAPI TOWN

1985

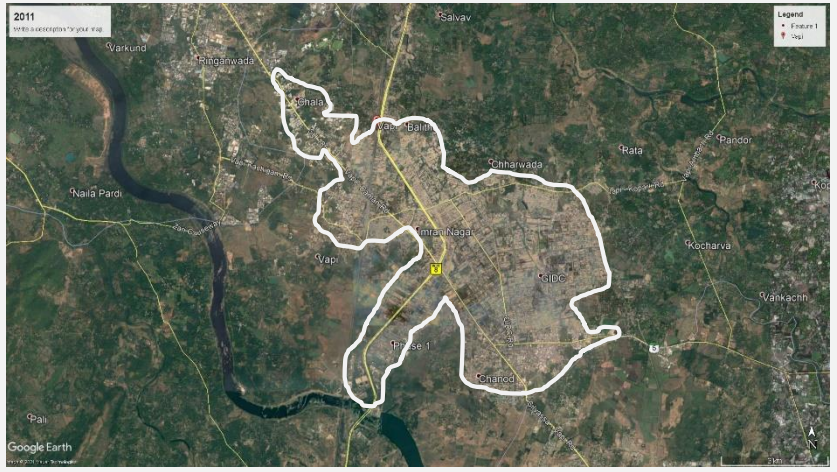


2002

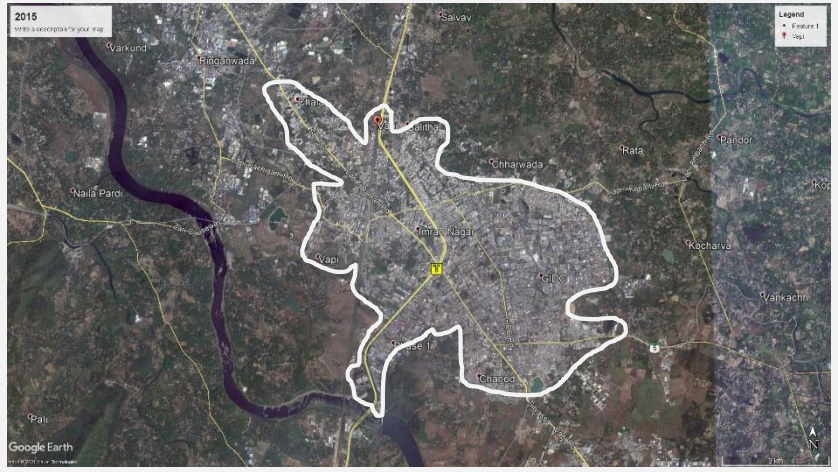
2005



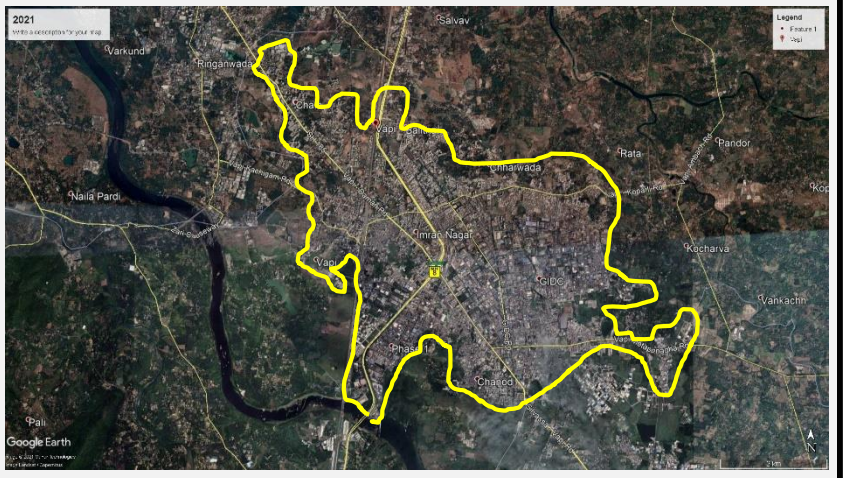
2012



2015



2021



PHYSICAL – DEMOGRAPHICAL GROWTH OF VAPI TOWN

POPULATION OF THE AREA

Sr. No	Year	Added area in Sq. km.	Total Area Sq. Km	Name of included area
1	1965	-	1.42(Gamtal)	Original Gamtal
2	1985	6.0	7.42	Vapi Village (Excluding GIDC)
3	2001	14.64	22.06	Chala and Dungra
4	2015	0.38	22.44	Vapi, Chala and Dungra

LITERACY RATE OF VAPI MUNICIPALITY

Area	Male literacy rate	Female literacy rate	Total literacy rate
Dungra	91	77	86
Chala	95	84	90
Vapi town	90	76	84
Vapi Municipality	91	77	85
Valsad district	78	60	69
Gujarat	80	58	69

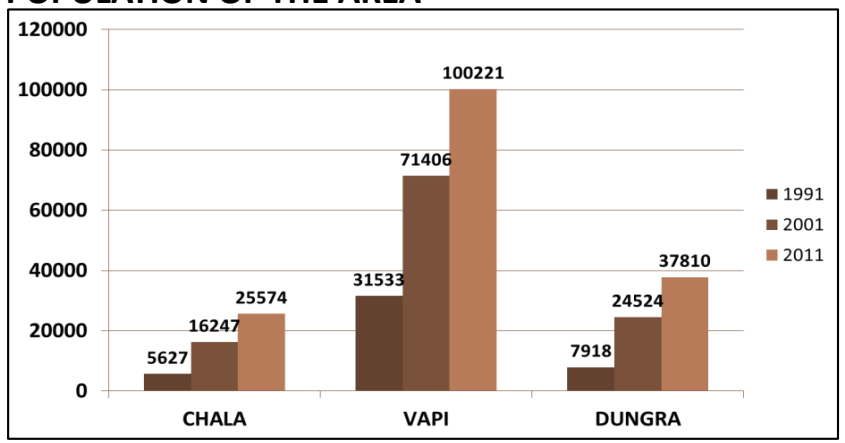
TOTAL POPULATION AND GROWTH RATE

Year	Chala	Growth Rate (%)	Dungra	Growth Rate (%)	Vapi	Growth Rate (%)	Total Population	Total Growth Rate (%)
1961					11,212			
1971					13,888	23.87		
1981	3705		3933		19620	41.27	27258	
1991	5627	51.8758	7918	101.30	31533	60.72	45078	65.37
2001	16247	188.733	24524	209.70	71406	126.4	112177	148.9
2011	25574	57.407	37810	54.17	100221	40.36	163605	45.85

SEX RATIO IN VAPI MUNICIPAL AREA.

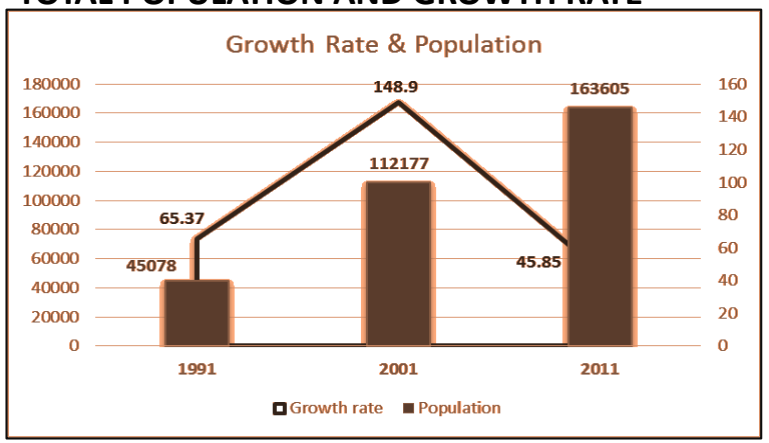
Area	Male literacy rate	Female literacy rate	Total literacy rate
Dungra	91	77	86
Chala	95	84	90
Vapi town	90	76	84
Vapi Municipality	91	77	85
Valsad district	78	60	69
Gujarat	80	58	69

POPULATION OF THE AREA



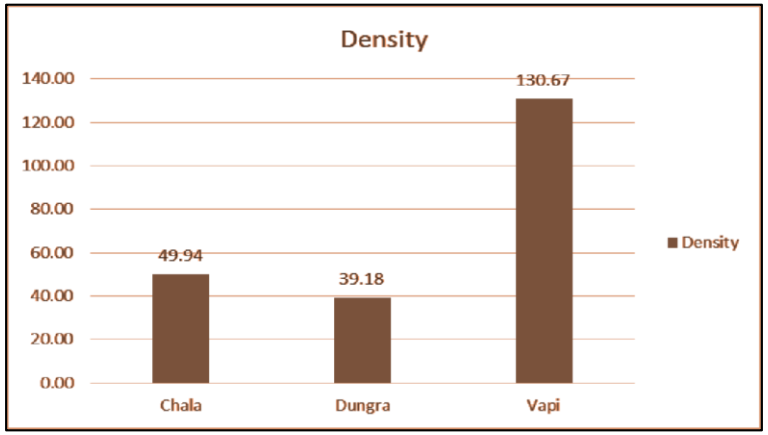
(Source: Census of India, 2011)

TOTAL POPULATION AND GROWTH RATE



(Source: Census of India, 2011)

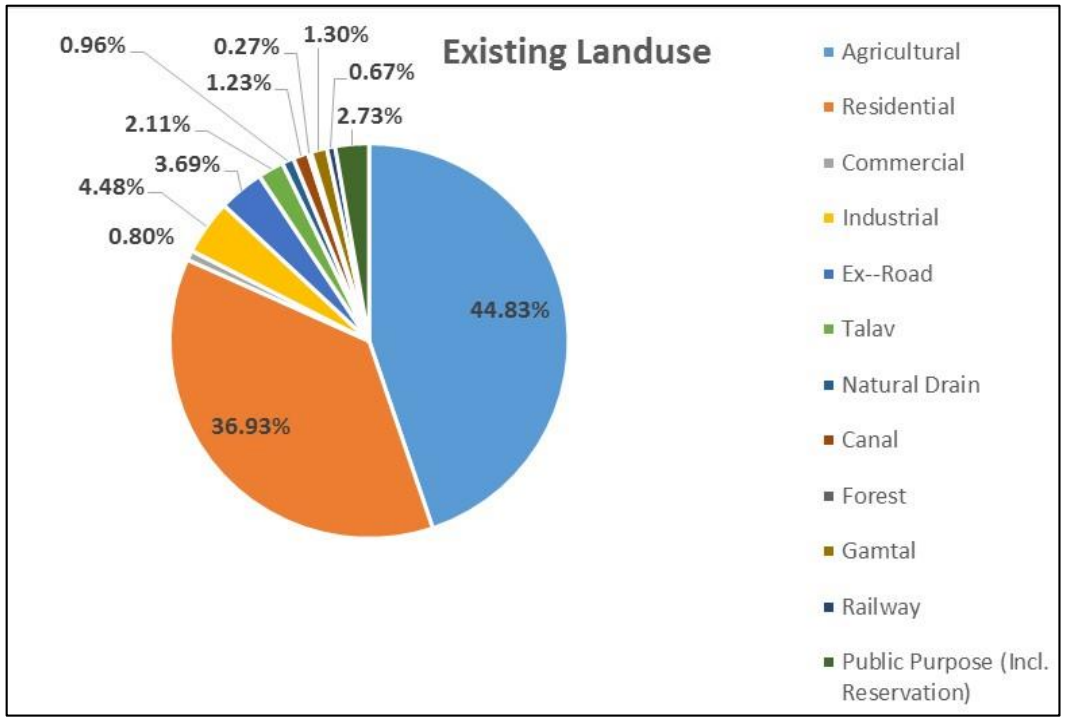
POPULATION DENSITY



(Source: Census of India, 2011)

PHYSICAL – DEMOGRAPHICAL GROWTH OF VAPI TOWN

EXISTING LAND USE PATTERN VAPI MUNICIPAL AREA



	Chala		Vapi		Dungra		Total Area (HA)	
Particular	Area (HA)	%	Area (HA)	%	Area (HA)	%	Area (HA)	%
Agricultural	222.63	43.47	250.4	32.65	533.11	55.24	1006.14	44.83
Residential	216	42.18	360.9	47.05	251.8	26.09	828.70	36.93
Commercial	3.13	0.61	13.86	1.81	0.9	0.09	17.89	0.80
Industrial	8.28	1.62	14.33	1.87	78	8.08	100.61	4.48
Ex-Road	20.63	4.03	39.18	5.11	22.9	2.37	82.71	3.69
Talav	11.3	2.21	19.15	2.50	16.85	1.75	47.30	2.11
Natural Drain	5.04	0.98	6.4	0.83	10.1	1.05	21.54	0.96
Canal	5.09	0.99	0.2	0.03	22.28	2.31	27.57	1.23
Forest	6.07	1.19	0	0.00	0	0.00	6.07	0.27
Gamtal	0	0.00	20.24	2.64	9.01	0.93	29.25	1.30
Railway	0	0.00	15.07	1.96	0	0.00	15.07	0.67
Public Purpose (Incl. Reservation)	13.98	2.73	27.24	3.55	20.15	2.09	61.37	2.73
Total	512.14	100.00	767	100.00	965.08	100.00	2244.22	100.00
Total Developed Area	267.11	52.16	491.02	64.02	405.04	41.97	1163.17	51.83
Total Un-developed Area	245.03	47.84	275.98	35.98	560.04	58.03	1081.05	48.17

WORK FORCE PARTICIPATION RATE

Sr.No.	Area	Total WFPR	Male WFPR	FemaleWFPR
1	Dungra	54	79	11
2	Chala	50	75	15
3	Vapi town	49	73	13
4	Vapi Municipality	50	75	13
5	Valsad district	54	67	40
6	Gujarat	49	65	33

SOCIAL INFRA-STRUUCTURE

SOCIAL INDICATORS IN VAPI

Sr. No.	Social Infrastructure	Nos.	Remarks
1	Hospital	15	2 Govt.
2	Clinics	14	
4	Primary school	4	
5	higher Secondary	22	
6	College	2	
7	Hotels	13	
8	Guest house	20	1 govt.
9	Community hall	9	
10	Theatre	3	1 in Vapi
11	Bank	12	6 Nationalized banks

LIST OF HEALTH FACILITY IN VAPI MUNICIPAL AREA

Sr. No	Health related services	No.
1	Clinic/dispensary	40
2	Operation theater	10
3	I.C.U. unit	02
4	X-ray unit clinic	05
5	Pathologic laboratory	10
6	Burn ward	01
7	Sono-graphy center	05
8	Physiotherapy	02
9	Medical	30

EDUCATIONAL INSTITUTES IN VAPI

Sr. No.	Education types	No.	Total no. of Room	No. of Student
1	College	04	75	3500
2	Higher secondary school	02	50	2500
3	Secondary school	05	250	6000
4	Primary school	07	65	3000
5	Nursery	20	20	400

TRRAFFIC AND TRANSPORT

STATISTICS OF ROADS EXISTING

Existing the Main Road in East Vapi	
Name of Road	Width of Road
Charavada Road	18m
Koparali Road (Railway St.-papillon Rest.)	24m
Silavassa Road	24m
N.H.-08/B(A'bad- Mumbai)	45m
Dungra Gamtal to Dungri Falia road	9m
Existing the Main road in West Vapi	
Daman Road	18 m
Balitha Road	9.0 m
Kabrasthan Road	7.5 m
Kachigam Road	
Namadha Road	

COMPARATIVE STATEMENT OF ROAD NETWORK

Sr. No	Name of Road	Propose road in D.P.(1982-1992) (Mt)	Existing Road Width (Mt) (2015)
1.	Daman Road	24.00	24.00
2.	Gamtal- Kachigam road	9.0	9.0
3.	Custom line road	12.0	12.0
4.	Vapi-chanod road	24.0	24.0
5.	Railway St.- Papillon Restaurant	24.0	18.0
6.	Tanki Falia road	18.0	9.0

COMPARATIVE STATEMENT OF ROAD DENSITY

Particulars	Existing Road length (Km)	Area of particulars in sq.km	Existing population	Length/ Sq. km	Length/1000 population
Vapi	25.7	7.67	100221	3.35	0.26
Chala	13.05	5.12	25574	2.55	0.51
Dungra	12.4	9.65	37810	1.28	0.33

NO. OF BUSES AT STATE BUS TRANSPORT

State Bus Transport	Departure	Arrival
Vapi Depot	284	284
Other Depot and divisions of state	78	78
Maharashtra	8	8
Total	370	370

VOLUME COUNT ON VAPI – MOTAPONDHA – DHARAMPUR STATE HIGHWAY

Mode	PCUs Apr-05	%share
Cars/jeep/three wheeler	8157	20
Buses	1818	4
Trucks	23385	58
Motor Cycles & Two Wheelers	6151	15
Animal drawn	1050	3
Total	40561	100

DRAINAGE AND SEWERAGE

PERCENTAGE OF HOUSEHOLD USING DRAINAGE FACILITIES

Villages	Ward no.	Percentage of household		
		Closed drainage	Open drainage	No drainage
Chala	1	55.6	31.6	12.9
	2	69.7	7.9	22.4
Vapi	3	94.5	3.3	2.2
	4	96.5	2.2	1.4
	6	38	55.6	6.4
	7	49	49.7	1.3
	8	42.3	31	26.7
	9	95.4	0.5	4.1
	10	56.7	11	32.3
	11	55.3	18.3	26.4
	12	13.9	70.5	15.6
Dungra	13	58.4	11.7	29.9
	14	28.4	57.8	13.8
	5	12	67.6	20.4

SANITARY WASTE DISPOSAL TYPE IN VAPI MUNICIPAL AREA

				Percentage Of Household Using Facilities						
Villages	Vapi(M) Ward No.	Total house hold	No. of House Hold Using Facilities	Flush/pour flush latrine connected to			Pit latrine		Households Having Latrine Facility Within the Premises	Households Not Having Latrine facility within the premises
				Piped Sewer System	Septic Tank	Other System	Ventilated Improved Pit	Open Pit		
Chala	1	2891	864	29.9	43	1	1.2	0.1	75.2	24.8
	2	3547	504	14.2	78.4	0.1	0	0.8	93.5	6.5
Vapi	3	3691	2425	65.7	31.7	0.2	0.2	0	97.8	2.2
	4	2220	730	32.9	60.5	0.3	4.1	0	97.8	2.2
	6	2026	55	2.7	41.3	0.3	0.9	0.4	45.6	54.4
	7	2693	805	29.9	58.1	0.2	0	0	88.2	11.8
	8	2420	489	20.2	45.5	0.6	2.8	0.6	69.7	30.3
	9	2301	895	38.9	55.8	0	0	0	94.7	5.3
	10	2784	231	8.3	60.6	0.1	0	1.4	70.4	29.6
	11	2251	504	22.4	41.1	5.6	0	0	69.1	30.9
	12	3445	38	1.1	65.3	0	0.2	0	66.6	33.4
Dungra	13	2751	977	35.5	46.3	1.1	0.1	0.1	83.1	16.9
	14	3708	460	12.4	54.6	0.3	1.2	5	73.5	26.5
	5	2847	396	13.9	50.5	1.5	4.5	0	70.4	29.6

GAP IN SEWAGE TREATMENT IN VAPI TOWN

SEWAGE DISPOSAL	SEWAGE GENERATED	SEWAGE TREATED	GAP
Vapi	10.1	0	10.1
Chala	2.3	0	2.3
Dungra	3.5	0	3.5
New areas	NA	NA	NA
Total	15.8	0	15.8

SOURCES OF WATER SUPPLY FOR HOUSEHOLDS IN VAPI MUNICIPALITY AREA

Source of water	Chala		Vapi		Dungra	
	Household	% of Household	Household	% of Household	Household	% of Household
Tap Water						
From Treated Source	1056	16	17908	75	3024	32
Covered Well	35	1	71	0.3	47	1
Hand Pump	1738	27	2698	11	3884	41
Tube Well/Borehole	2388	37	956	4	968	10
Other Sources	286	4	79	0.4	285	3

HOUSING

OCCUPANCY RATE IN VAPI MUNICIPAL AREA

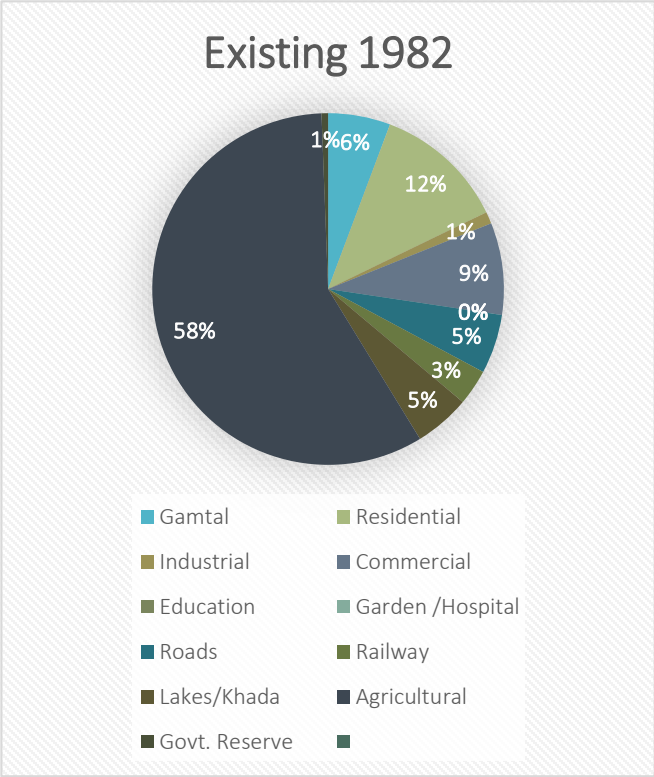
	Vapi	Chala	Dungra
Population	100221	25574	37835
Households	23831	6438	9306
HH size	4.11	4.33	4.29
Occupied residential stock	23495	6399	9038
Occupancy rate	1.4	6.4	8.79
Houseless households	10060	2181	2926

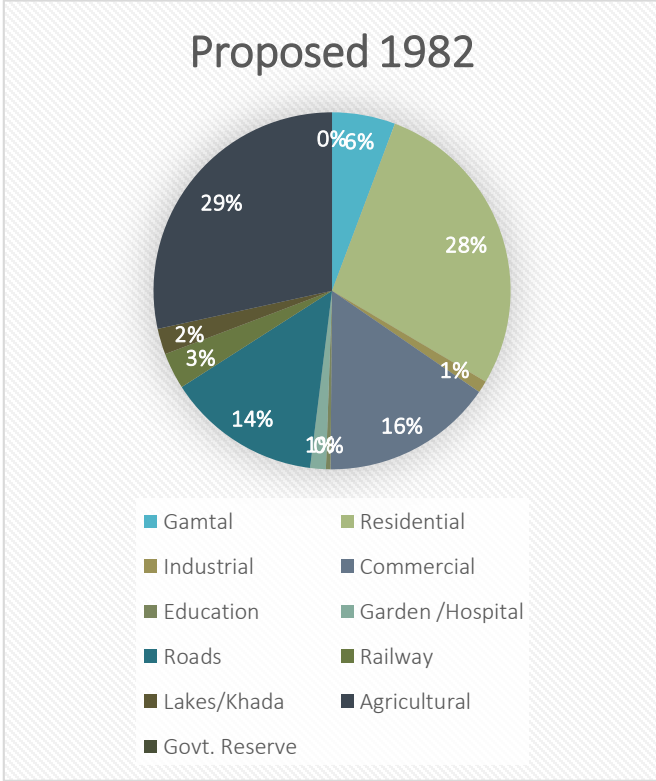
CENSUS HOUSING STOCK AND ITS USAGE

Census	Vapi	Chala	Dungra	Total
Residential Use	23495	6399	9098	38992
Other Use	39	336	207	582
Total	29534	6734	9305	39574

REVIEW OF PROPOSED DEVELOPMENT PLAN OF 1982

Sr. No	Type	Existing 1982	Proposed 1982
1	Gamtal	105	105
2	Residential	221.6	509
3	Industrial	20	20
4	Commercial	155	285
5	Education	0	7.6
5	Garden /Hospital	0	26
6	Roads	100	256.05
7	Railway	60.35	60.35
8	Lakes/Khada	94.05	43
9	Agricultural	1066	521
10	Govt. Reserve	11	0
11	Total	1833	1833



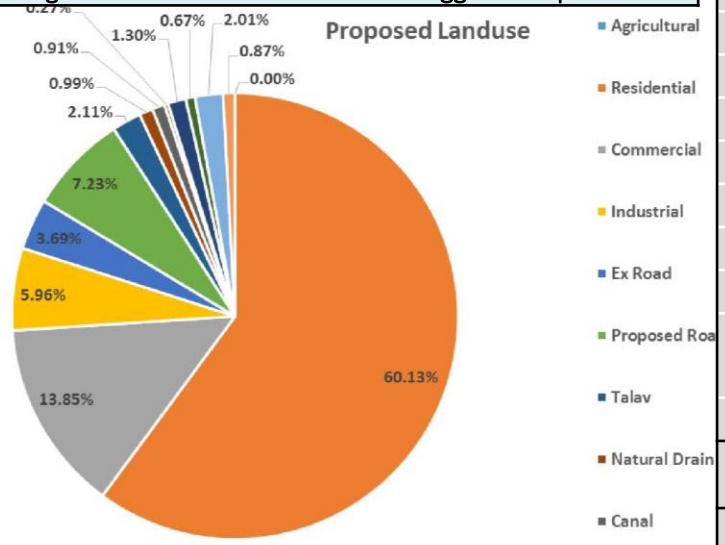


ANALYSIS

POPULATION PROJECTION IN 2031 A.D. FOR THE DEVELOPMENT PLAN

Sr. No	Name of The Component	Population As Per Census					Projected Population	
		1971	1981	1991	2001	2011	2021	2031
1	Vapi City	13888	19620	31533	71406	100221.3	1,76,229	3,09881
2.	Chala		3705	5627	16247	25574	5,0979	1,01621
3.	Dungra		3933	7918	24524	37810	8,3840	1,85908
4.	Total Population of Vapi Urban Authority Development		27258	45078	112177	163605.3	3,11,048	5,97,410

Population projection of geometric increase method being the highest is adopted for the DP as Chala and Dungra form new urban centers with exponential growth trends due to Industrial trigger at Vapi GIDC.



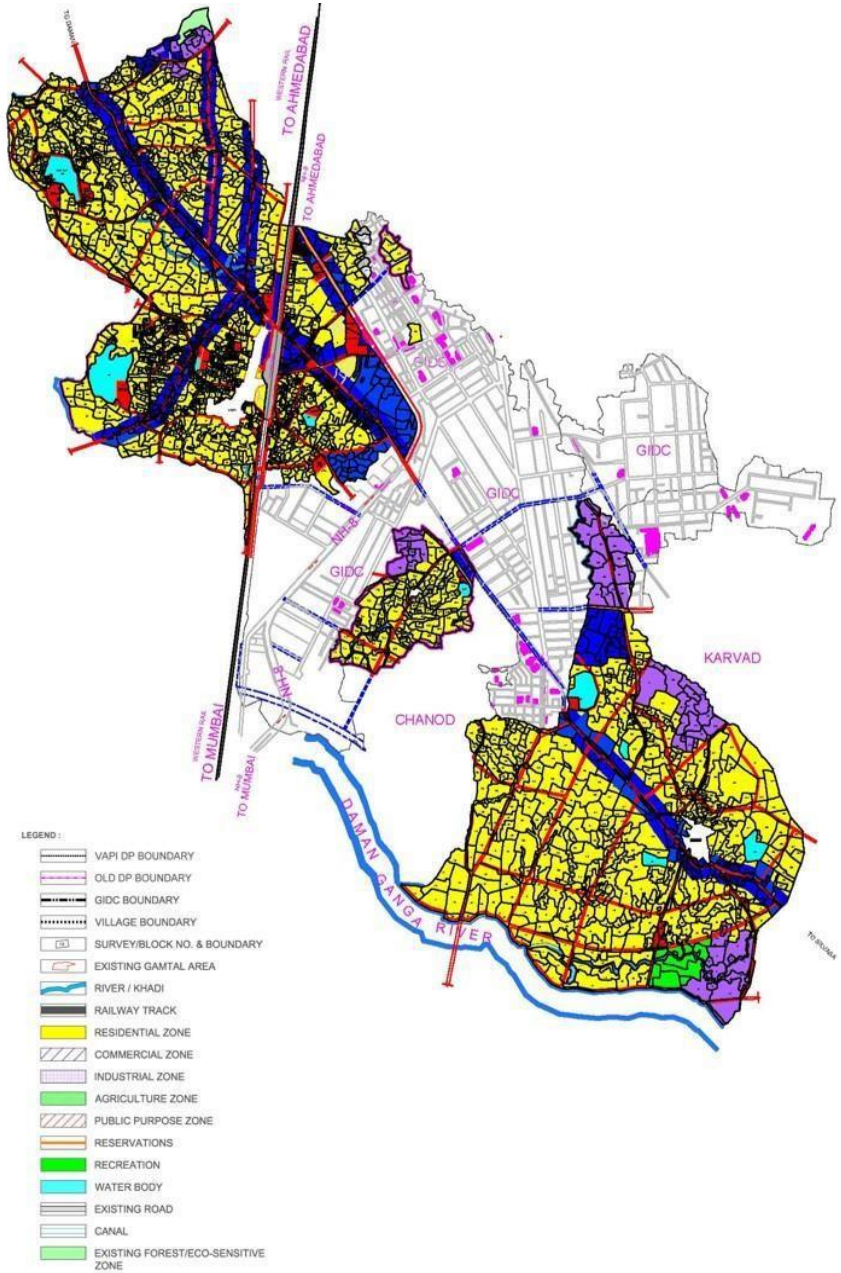
SOCIAL INFRASTRUCTURE REQUIREMENTS

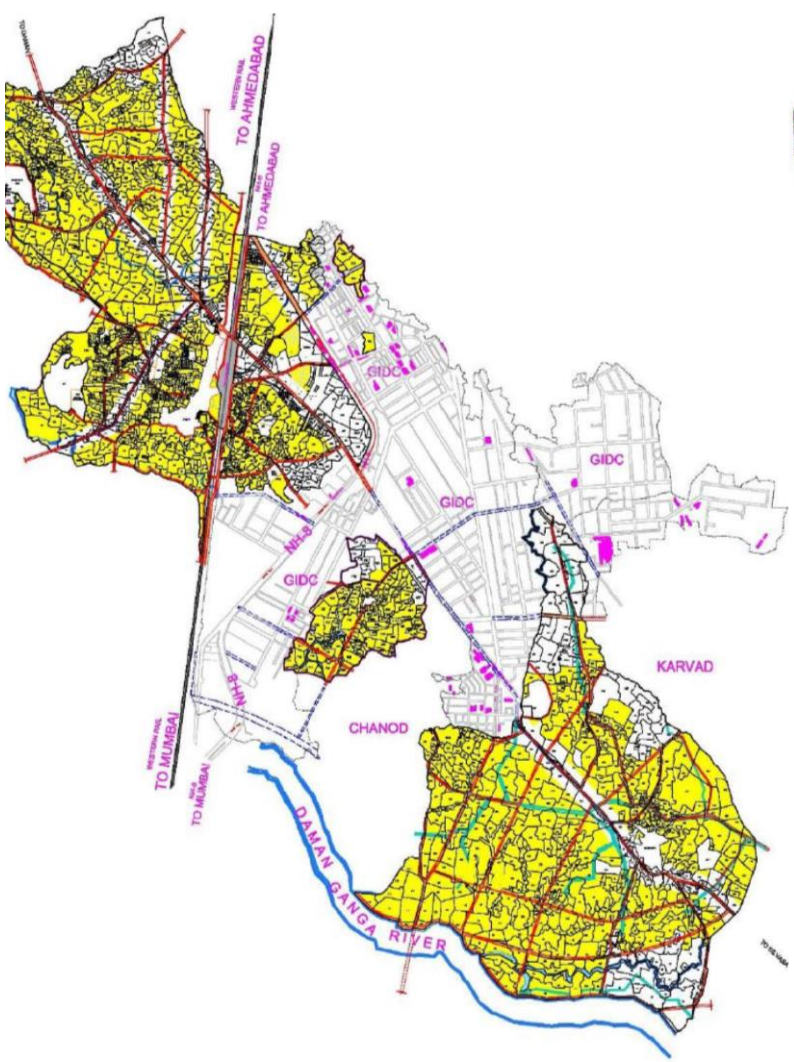
YEAR	POPULATION	HSS/0.25	COLLEGE/1.25 LAKH	HOSPITAL.0.5 LAKHS	BED/500
2001	112177	5	1	3	299
2011	163605	7	2	5	491
2021	311048	13	3	7	623
2031	597410	24	4	12	1195

PROPOSED LAND USE PATTERN FOR VAPI MUNICIPAL AREA

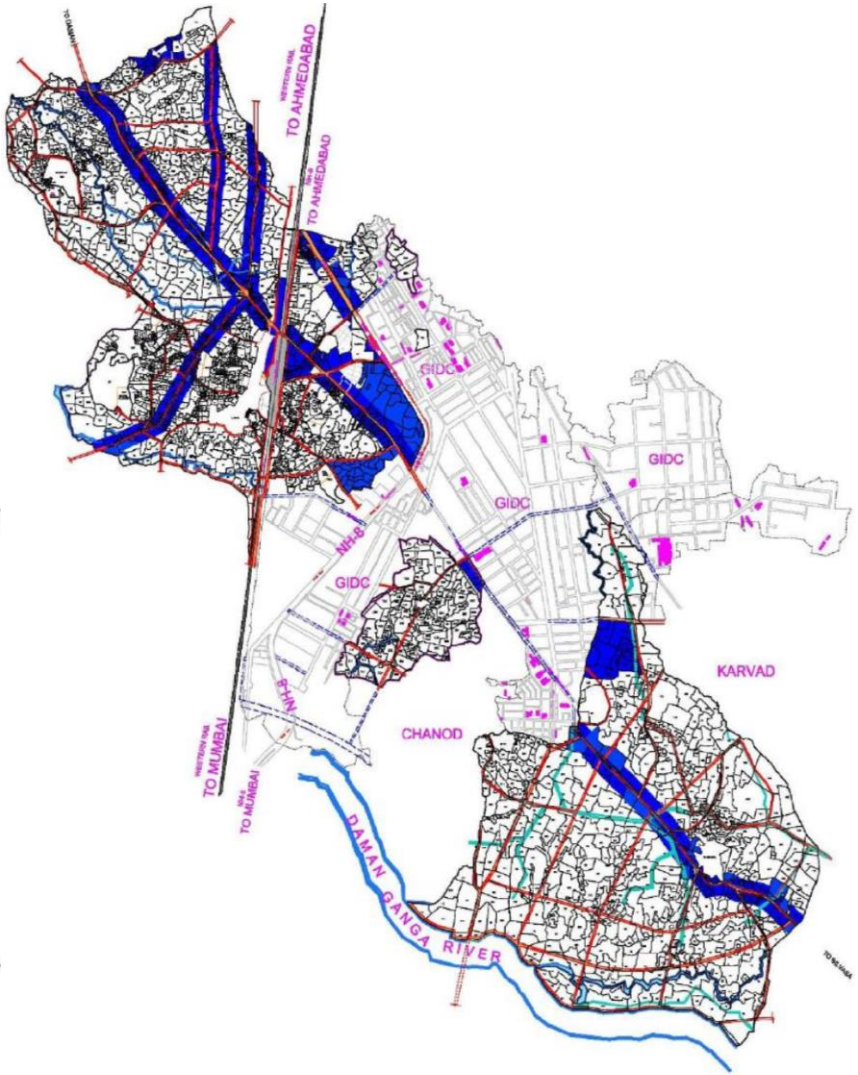
	CHALA		VAPI		DUNGRA		Total	
Particular	Area (HA)	%	Area (HA)	%	Area (HA)	%	Area (HA)	%
Agricultural	0	0	0	0	0	0	0	0.00
Residential	320.60	62.6	427.06	55.68	601.80	62.36	1349.4	60.13
Commercial	93.00	18.16	133.69	17.43	84.19	8.72	310.87	13.85
Industrial	11.55	2.26	12.90	1.68	109.28	11.32	133.73	5.96
Ex Road	20.63	4.03	39.18	5.11	22.97	2.38	82.78	3.69
Proposed Road	31.80	6.21	61.78	8.05	68.58	7.11	162.16	7.23
Talav	11.3	2.21	19.15	2.50	16.9	1.75	47.35	2.11
Natural Drain	5.04	0.98	6.5	0.85	10.74	1.11	22.28	0.99
Canal	5.09	0.99	0	0.00	15.41	1.60	20.5	0.91
Forest	6.07	1.19	0	0	0	0.00	6.07	0.27
Gamtal	0	0.00	20.24	2.64	9.01	0.93	29.25	1.30
Railway	0	0.00	15.07	1.96	0	0.00	15.07	0.67
Public-Purpose (incl. existing reservation)	7.05	1.38	31.44	4.10	6.7	0.69	45.19	2.01
Recreation	0	0.00	0	0	19.5	2.02	19.5	0.87
Total	512.14	100	767.00	100.00	965.07	100.00	2244.2	100.0
Total Developable Area	484.64	94.6	741.35	96.66	922.02	95.54	2148.0	95.71
Total Un-Developable Area	27.5	5.37	25.65	3.34	43.05	4.46	96.2	4.29

PROPOSED LAND-USE PLAN



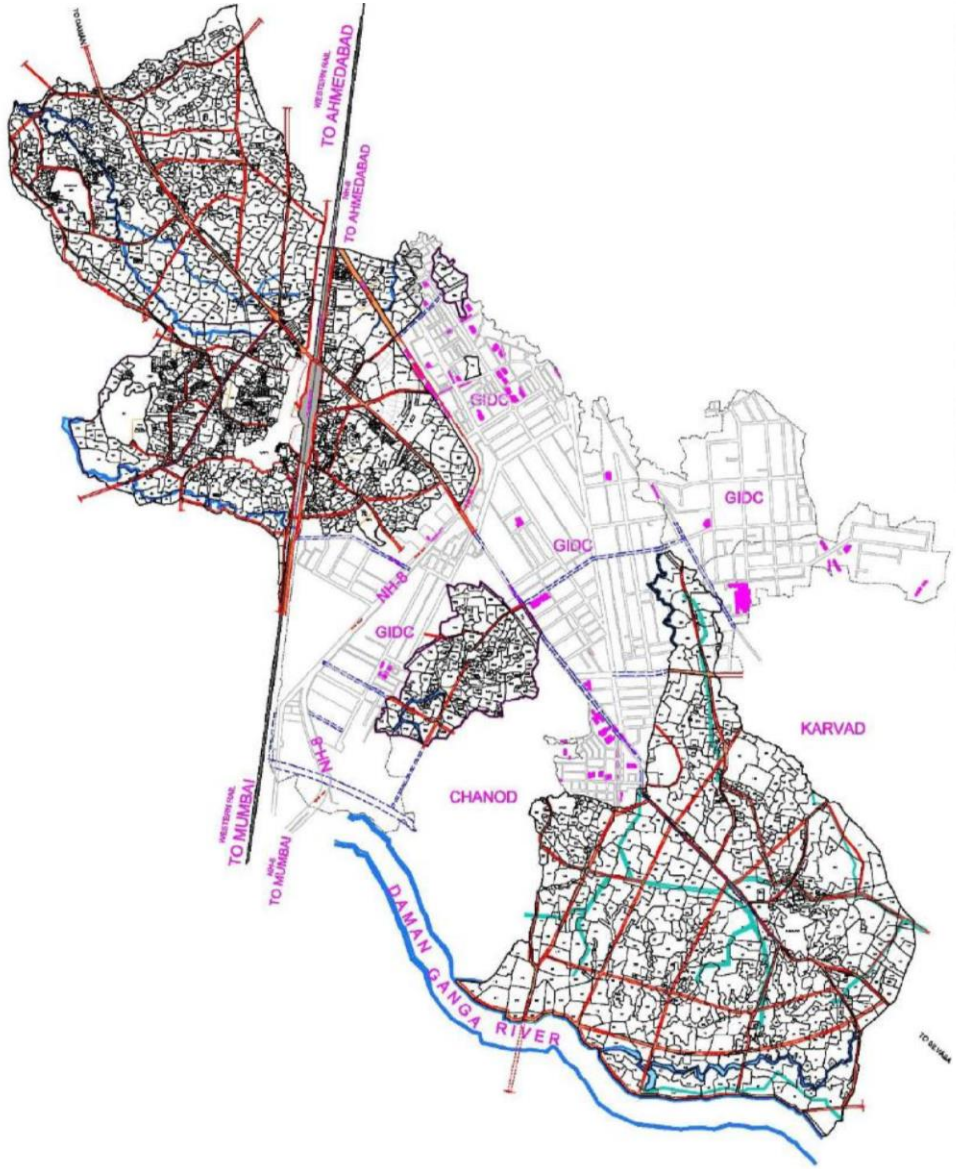


RESIDENTIAL MAP

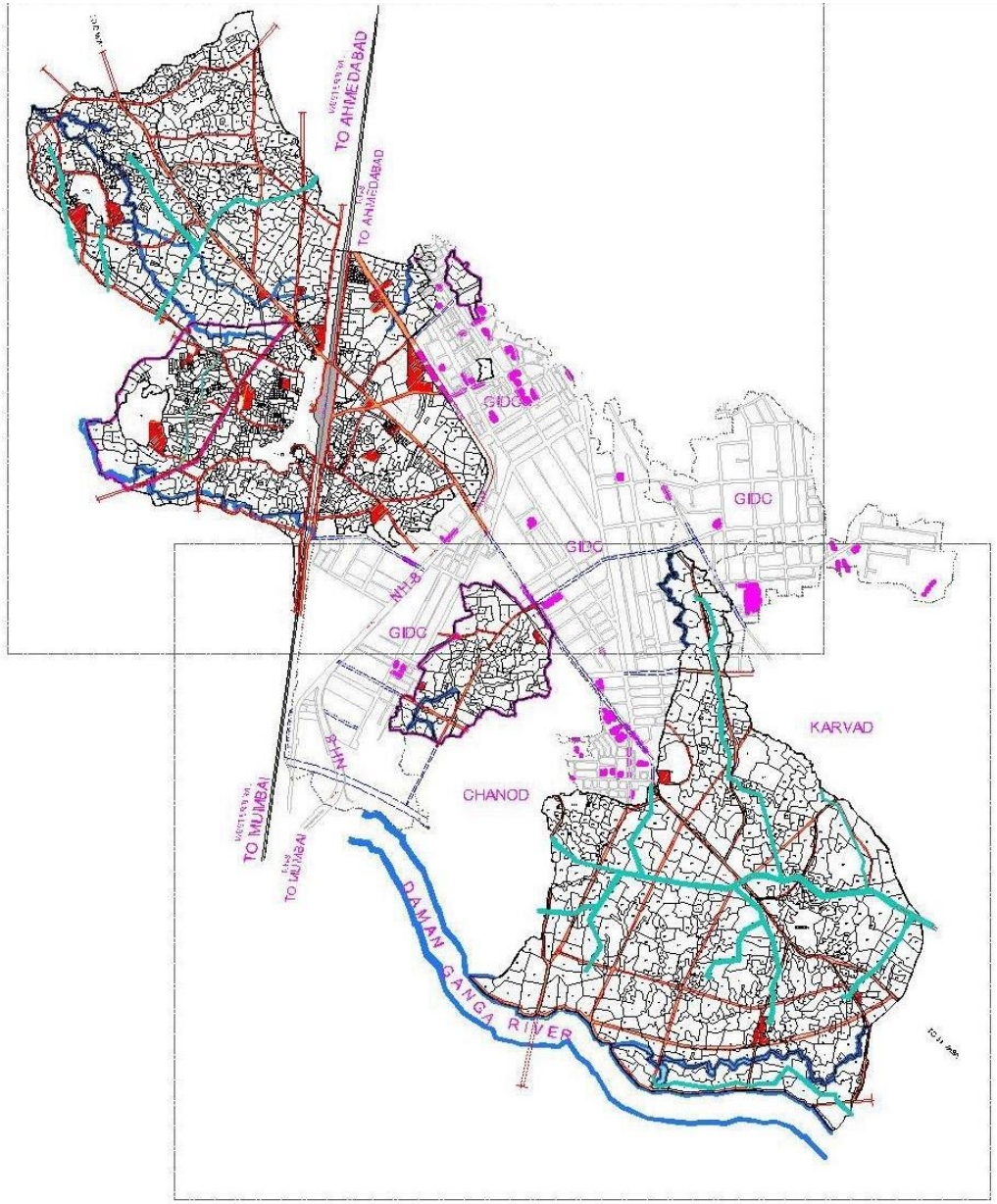


COMMERCIAL MAP

ROAD NETWORK MAP



PUBLIC ACTIVITY MAP



COSTING AND RESOURCE MOBILIZATION

COST BREAK UP FOR CONSTRUCTION OF ROADS

AREA	PROPOSED ROAD AREA (SQ.KM)	COST (RS. IN CR)
VAPI MUNICIPALITY	19.89	122.823

COST OF PROPOSED ROAD

ESTIMATE FOR COST OF WORKS:- 1.ROADS (INCLUDING INTERCHANGES)

NAME OF WORK: CONSTRUCTION OF ROADS (CEMENT CONCRETE) INCLUDING EXCAVATING, FILLING, WATERING, HAMMERING, SOILING, CARPETING, SILL COAT, COST OF DIVIDER, FOOTHPATH, SINAGES ETC. COMPLETE.

ROAD CATEGORY	ROAD WIDTH	LENGTH (MT)	TOTAL LENGTH (MT)	NO OF LANES	LANE WIDTH (MT)	CARRIAGE WAY	RATE PER RUNNING METER (INR)	TOTAL AMOUNT (INR)
	45 MT. WIDE	930.05	930.05	4	3.50	2 WAY, DIVIDED	100575.00	93,539,778.75
	30 MT. WIDE	423.81	423.81	4	3.50	2 WAY, DIVIDED	67050.00	28,416,460.50
	24 MT. WIDE	18542.59	18542.59	2	3.50	2 WAY, DIVIDED	53640.00	
	-	-	19896.45	-	-	-	-	
	TOTAL (A)							1,116,580,766.85
	10 % MISC. EX PENDITURES							
	GRAND TOTA L							
							SAY	1,228,239,000

COST OF ELECTRICITY POLES

ESTIMATE FOR COST OF WORKS: - 2. ELECTRIC STREET LIGHTING

NAME OF WORK: SUPPLYING AND INSTALLING POLES COMPLETE WITH UNDER GROUND WIRING, LAMP FITTING WITH COURSE OF OIL PAINT ETC. COMP. PROVIDED AT EVERY 30 m. DISTANCE.

ROAD WIDTH	TOTAL LENGTH (Mt)	Distance Between Pole (Mt)	NO. OF POLES	RATE PER POLE (RS)	AMOUNT
45 mt. WIDE	930.05	50.00	19	45000	837,045.00
30 mt. WIDE	423.81	50.00	8	45000	381,429.00
24 mt. WIDE	18542.59	50.00	371	50000	18,542,590.00
TOTAL				.....(A)	1,97,61,064.00
10 % MISC.EXPENDITURES					19,76,106.40
GR AND TOTAL					2,17.37,170.40
				SAY	2,17,38,000.00

TOTAL COST OF ROAD AND ELECTRICAL POLES

EXPENSES UNDER SECTION 40 (3) (b), (c), (d), (f), (g) & (h) of The GTP & UD Act - 1976.

NAME OF WORKS	AMOUNT
CONSTRUCTION OF ROADS (CEMENT CONCRETE /FLEXIBLE PAVEMENT) INCLUDING EXCAVATING, FILLING, WATERING, HAMMERING, SOILING, CARPETING, SILL COAT, COST OF DIVIDER, FOOTHPATH, SINAGES, INTERCHANGES ETC. COMPLETE.	1,22.823 CR.
SUPPLYING AND INSTALLING POLES COMPLETE WITH UNDER GROUND WIRING, LAMP FITTING WITH COURSE OF OIL PAINT ETC. COMP. PROVIDED AT EVERY 30 m. DISTANCE.	2.173 CR.
TOTAL AMOUNT RS (CRORES)	124.996

COSTING AND RESOURCE MOBILIZATION

PREPARATION OF DETAILED PLANS AND STUDIES

IMPLEMENTATION OF THE REVISED DRAFT DEVELOPMENT PLAN WILL REQUIRE MULTIPLE STUDIES, GUIDELINES AND PLANS TO BE PREPARED FOR EFFECTIVE AND SUCCESSFUL IMPLEMENTATION. GUIDELINES FOR PREPARING NETWORK ROAD PLAN, DESIGN OF COMPLETE STREETS, PARKING MANAGEMENT PLAN, , TRAFFIC MANAGEMENT PLAN, TRAFFIC SURVEYS AND TRAVEL DEMAND MODELING, ETC. ARE SOME EXAMPLES OF SUCH PLANS AND STUDIES.

TOTAL COST OF SUCH PLANS AND STUDIES ARE ESTIMATED TO BE ABOUT **RS.7500 CRORES OVER THE NEXT DECADE**.

DATABASE PREPARATION AND PROCEDURAL CHANGES

LEARNING FROM THE PAST, THE DEVELOPMENT PLAN RECOMMENDS UPDATING VARIOUS PROCEDURES AND CREATING AND MAINTAINING CRUCIAL DATABASES. THIS INCLUDES PREPARING AND MAINTAINING HOUSING UNIT SURVEY AND DATABASE, GIS DATABASE FOR PHYSICAL INFRASTRUCTURE INCLUDING WATER, SEWAGE, STORM WATER ETC., BUILDING AND MAINTAINING EMPLOYMENT DATABASE, PARKING SURVEYS AND DATABASE ETC.

THE PROCEDURAL CHANGES SHALL INCLUDE IMPROVEMENTS IN BUILDING PERMISSION RECORDS DATABASE TO CAPTURE ADDITIONAL INFORMATION, ONLINE DATABASE FOR ALL SANCTIONED BUILDING PLANS, ENHANCEMENT OF RESOURCES AND CAPACITY BUILDING OF EXISTING UNITS TO ENSURE EFFECTIVE IMPLEMENTATION ETC.

RESOURCE CELL

AS DISCUSSED EARLIER, A RESOURCE CELL IS PROPOSED TO BE FORMED FOR IMPLEMENTATION AND MONITORING OF THE PROGRESS OF VARIOUS PROJECTS, PREPARATION OF VARIOUS PLANS AND CONDUCTING STUDIES AND RESEARCH AS A PART OF DEVELOPMENT PLAN. THE TOTAL COST FOR RESOURCE CELL INCLUDES THE FOLLOWING COMPONENTS

1. PLANNING AND RESEARCH UNIT
   - INFRASTRUCTURE SET UP COST
   - MANPOWER COST (10 YEARS)
2. IMPLEMENTATION MONITORING UNIT
   - INFRASTRUCTURE SET UP COST
   - MANPOWER COST (10 YEARS)

THE TOTAL COST FOR SETTING UP RESEARCH CELL IS RS. 40 CRORES.

TOTAL COST FOR PROPOSED DEVELOPMENT PLAN

PUTTING ALL THE COSTS TOGETHER, **THE TOTAL COST OF PROPOSED DEVELOPMENT PLAN 2031 IS BEEN ESTIMATED TO BE ABOUT RS. 10,000 CRORE**.

Conclusion

The first expansion of the Nagarpalika should be treated as a signal of accelerated urbanization activity. Our observations reveal that the areas not included in the current Vapi expansion is also getting developed as residential high-rises. The industrial sectors of Balitha, though smaller in scale as compared to the Vapi GIDC, together with it, continue to act as urban triggers and continue to attract migrant population. The need for regional map of Vapi is a call for timely action, failing which, we would be foolish victims top the vagaries of haphazard growth. The need for an identification of a proper system of hierarchical regions as imperative to balanced development can hardly be emphasized. To prevent the proposed Development Plan become a limiter of the vision actually needed, and to take advantage of the current possibility of greater industrial opportunity, a definite planning hierarchy needs to be established.

Recommendations

Sr. No.	Basis	Major Considerations
1	Geographical Determinants	Presence of a readily conceivable unit based on rational understanding of obvious geographical boundaries of rivers on two sides
2	Development Index Analysis	Socio-economic development , physical infrastructure provision level, Taluka-wise
3	Village rank size analysis	Simple ranking given for population size of settlements And Observation of ranking trends
4	Accommodation Of Future Population	Balanced spatial distribution and allocation-equity Taluka-wise population analysis
5	Activities' Location	Location of new activities/relocation of old activities found unsuitable to the upcoming trends keep pace with balanced development
6	Infrastructure Provisions: Physical & Socio-Economic	Population growth rate, density
7	Natural Systems Protection	Ecological overlay analysis for optimal resource allocation
8	Environmental Management Decision Rules And Guidelines	Utilization pattern of land, water and other natural resources within the region and Waste Disposal mechanism

THANK YOU