



INTERNATIONAL JOURNAL OF PURE AND APPLIED RESEARCH IN ENGINEERING AND TECHNOLOGY

A PATH FOR HORIZING YOUR INNOVATIVE WORK



SPECIAL ISSUE FOR NATIONAL LEVEL CONFERENCE "Recent Trends and Development in Civil Engineering"

URBANIZATION OF DANTALI VILLAGE AT GANDHINAGAR DISTRICT

KEVAL SAVANI¹, DHAVAL M. PATEL², ABHIJITSINH PARMAR², DARSH PATEL¹, HETAL PATEL¹

1. U.G. Student, Dept. of Civil Engineering, SVBIT, Gandhinagar, Gujarat – 382021
2. Asst. Prof., Dept. of Civil Engineering, SVBIT, Gandhinagar, Gujarat – 382021

Accepted Date: 27/01/2018; Published Date: 01/03/2018

Abstract: Reurbanization basically means to redevelop an existing village or city and provide it with the latest facilities and remove the problems of the present technique used. In this paper, we described the ecosystem for a village and then mapped out an integrated design procedure for building an Ideal Village. We can define an Ideal Village as a village in which a bundle of services are delivered to its residents and businesses in an effective and efficient manner. Dantali is a village situated in Kalol Taluka in Gandhinagar District of Gujarat State, India. Dantali village is situated in the nearby locality of adalaj town. Dantali village is 15 km away from Gandhinagar. The population of Dantali village is 1662 as per Census 2011. In dantali village, a school, good water purification technique and farming facility are available but is lacking in some of the facilities required for an ideal village like toilet in house, public garden, shopping market, etc. The five designs to be provided in the village are as follows: Design of Low cost Toilet, Design of shopping market, Design of Gas power generator, Design of public garden and Design of public library.

Keywords: Ideal village, Low cost, Design, Data analysis, Infrastructure Facility

Corresponding Author: KEVAL SAVANI



Access Online On:

www.ijpret.com

How to Cite This Article:

Keval Savani, IJPRET, 2018; Volume 6 (7): 124-132

PAPER-QR CODE

INTRODUCTION

Reurbanization is the process of reimagining and redesigning the whole infrastructure of the village and improving the present infrastructure by applying the same.

70% of India's populations (750 million) live in about 6 million villages. Village occupies an area of 5 sq. km on an average. A village has around 200-250 households and most of them are farmers, so it is typically not possible to find out all the houses in one or two storeys. Villages are spaced 2-3 km apart, and spreading out in all directions from the city markets. The market centers are typically spaced 35-45 km apart. Each such Centre serves as a catchment of around 200-350 villages in a radius of about 25 kms. As the population and the economy is growing, several large villages are continuously converting to cities and market centers. People in village areas should have the same quality of life as that enjoyed by the people living in a sub city and city areas. Further there are cascading effects of poverty, unemployment, poor and inadequate infrastructure in village areas on city centers causing slums and consequential social and economic tensions manifesting in economic deprivation and city poverty. Hence Village Development which is concerned with economic growth and social justice, improvement in the living standard of the village people by providing adequate and quality social services and minimum basic needs becomes essential.

Urban: In human settlements, urban stands for an area that is characterized by high human population and vast human built infrastructures in comparison to the areas surrounding it. City, towns, conurbations are examples of urban and this term is can't be extended to villages and hamlets. At present, 3.9 billion people out of the population of 7.25 billion people, are living in urban areas.

Rural: Rural has simple definition, an area that is located outside the towns and cities is called rural like villages and hamlets. Rural areas have a low population and small settlement as compare to urban areas.



Figure 1: Rural Area ^[1]



1. Figure 2: Urban Area ^[2]

1) Example or live case studies of ideal village of India / Gujarat.

Punsari, Dist-sabarkantha, Gujarat, Anandpura, Dist-mahesana, Gujarat, Dharmaj, Dist -anand, Gujarat, Thamna, Dist -anand, Gujarat, etc.

Punsari village has population of around 6000 people. It has 23 different communities which mainly consists of Thakor community followed by Patel, Brahmin etc. These village follows the Panchayati raj system. About 98% population is engaged in agricultural activities and about 2% population is having own shops or involved in other activities. The people of the village are using new and advanced technology in the education system. In this village, the people are provided with the Wi-Fi facilities. Some of the facilities provided by the gram- panchayat of the village includes local mineral water supply, sewerage and drainage project, a primary healthcare centre, banking facilities and toll-free complaint reception service. Punsari village received the award as the best Gram Panchayat in Gujarat.

I. PROBLEM DEFINITION

The main occupation of the people of the village is agriculture and 60% of them are farmers. About 40% of the people have own business, shop etc. Now, the people are educated so people are doing jobs and other business. Due to proper awareness the people had adopted improved irrigation and are using drip irrigation. We have provided more information about agricultural use because the village and country growth mainly depends upon agriculture.

Though the social scenario of village is agriculture, the villagers are celebrating all the festivals. The villager are trying to maintain the provided facilities. The economic condition of the villagers is good so they require more facilities. There is a well-conditioned gram panchayat in the village. The Education facilities are provided in the village through primary and secondary schools. Primary healthcare center is available in the dantali village.

In dantali village, a school, good water purification technique and farming facility are available but is lacking in some of the facilities required for an ideal village like toilet in house, public garden, shopping market,etc. The five designs to be provided in the village are as follows: Design of Low cost Toilet, Design of shopping market, Design of Gas power generator, Design of public garden and Design of public library.

II. OBJECTIVES AND SCOPE

Main objective behind this paper is to find out the method of approaching this village with best facilities and to find out the problem which the people face in the village area. To promote integrated development of rural areas with provision of quality housing, education facilities, health center, and irrigation for agriculture, employment opportunities, and supporting physical and social infrastructure. Basic infrastructure facilities-sewage, drainage, solid waste management, water supply and transport should be the priority focus of the facilities to be provided.

The scope of this paper will be to find energy source and also gain so many things regarding the same. The subject matter or a scope of rural development is not narrow as revealed by the definitions, particular in country when large number of population is there, so rural sociology has been changing from time to time.

III. STUDY AREA

Dantali is a village situated in Kalol Taluka in Gandhinagar District of Gujarat State, India. Dantali village is situated in the nearby locality of adalaj town. Dantali village is 15 km away from Gandhinagar. The population of Dantali village is 1662 as per Census 2011.

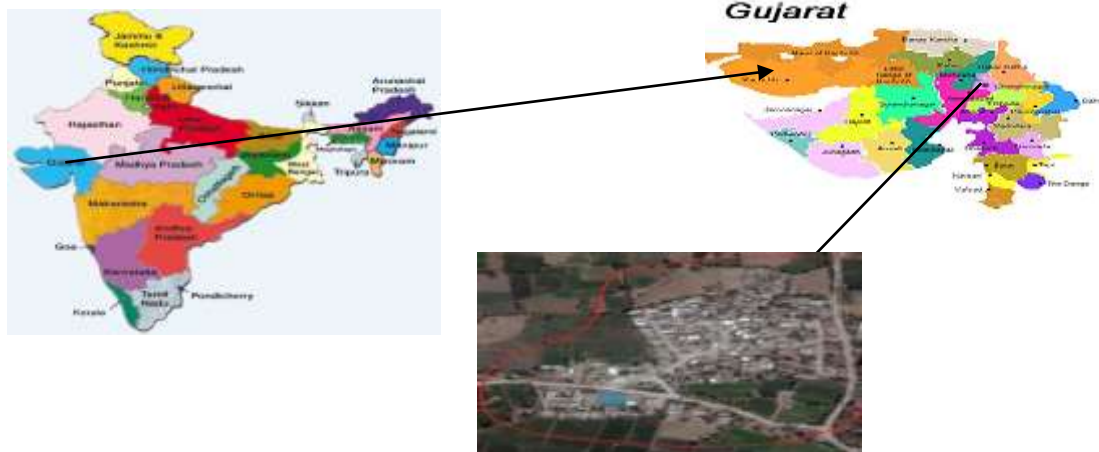


Figure 3 : Dantali village, Taluka: kalol, District: Gandhinagar [3]

IV. METHODOLOGY

- Step 1: Understanding the concept of reurbanization
- Step 2: Problem identification of village
- Step 3: Literature review and data collection
- Step 4: Study of ideal village and techno-economical survey
- Step 5: Data presentation – Amenities available, Gap analysis and village based map
- Step 6: Design proposal and recommendation
- Step 7: Conclusion

V. DATA GAP ANALYSIS:

Vishwakarma Yojana: Phase IV

Facilities	Planning Commission/UDPFI Norms	Village Name:	DANTALI	
		Population:	1666	
		Existing	Required as per Norms	Gap

Social Infrastructure Facility as					
Education					
Anganwadi	Each or Per 2500 population	3	1	2	
Primary School	Each Per 2500 population	1	1	0	
Secondary School	Per 7,500 population	1	0	1	
Higher Secondary School	Per 15,000 Population	0	0	0	
College	Per 125,000 Population	0	0	0	
Tech. Training Institute	Per 100000 Population	0	0	0	
Agriculture Research Centre	Per 100000 Population	0	0	0	
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	1	1	0	
PHC & CHC	Per 20,000 population	0	0	0	
Child Welfare and Maternity Home	Per 10,000 population	0	0	0	
Hospital	Per 100000 Population	0	0	0	
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutcha house)			0	
Physical Infrastructure Facilities					
Transportation		Adequate		Inadequate	
Pucca Village Approach Road	Each village	45%	55%	100%	
Bus/Auto Stand Provision	All Villages connected by PT (ST Bus or Auto)	0		0	
Drinking Water (Mi nimum 70 lpcd)		Adequate		Inadequate	

Over Head Tank	1/3 of Total Demand	100%	100%	100%
U/G Sump	2/3 of Total Demand	100%	100%	100%
Drainage Network		Adequate	Inadequate	
Open		30%	70%	100%
Cover		45%	55%	100%
Waste Management System		Adequate	Inadequate	
Electricity Network		Adequate	Inadequate	
Socio- Cultural Infrastructure Facilities				
Community Hall	Per Population 10000	0	0	0
community hall cum Public Library	Per Population 15000	0	0	0
Cremation Ground	Per population 20,000	0	0	0
Post Office	Per population 10,000	0	0	0
Gram Panchayat Building	Each individual/group Panchayat	1	1	0
APMC	Per Population 100000	0	0	0
Fire Station	Per Population 100000	0	0	0
Public Garden	Per village	0	1	1
Police post	Per 40,000Population	0	0	0

VI. RESULTS AND DESIGN

By performing the gap analysis and tacheo-economical survey of the dantali village, we find out the various problems of the people of the village like lack of attached toilet, improper waste water treatment method, lack of public garden, lack of public library, etc. Due to the lack of attached toilet, the people of the village were facing the various problems like unhygienic and unhealthy surrounding and due to the improper waste water treatment method, the people were facing the problem of mosquitoes nuisance. So, we suggested the proper method for waste water treatment and the design of low cost toilet from the above results and discussion.

VII. METHOD AND DESIGN

Waste water treatment:

Stabilisation pond system for waste water treatment:

Waste stabilization ponds (WSPs) are a low-cost, low-energy, low-maintenance and, above all, a sustainable method of wastewater treatment. Waste stabilization ponds are an extremely appropriate method of wastewater treatment in India particularly in rural areas. The high temperatures that occur throughout the year in most of the country are especially favourable for anaerobic ponds. Waste stabilization ponds (WSP) are shallow man-made basin into which wastewater flows and from which, after a retention time of few days a well-treated effluent is discharged. WSP systems comprise of a series of ponds – anaerobic, facultative and maturation pond series.

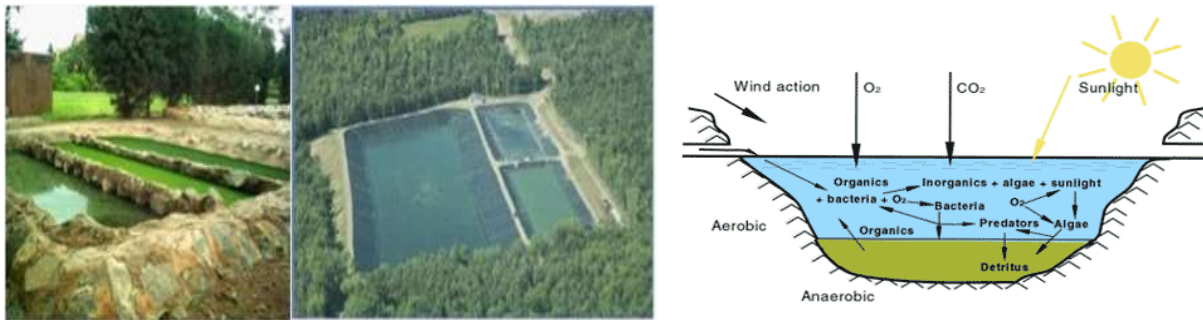


Figure 4: Stabilisation pond system [4]

The other methods which can be used for waste water treatment are: Duckweed based wastewater treatment with pisciculture, root zone treatment system, etc.

Low cost toilet:

Salient features: Low cost toilet is appropriate where space is limited. It is easier to empty when pit fills. Superstructure is made from locally available materials such as banana leaves, bamboo sticks and gunny bags. It is appropriate for festival places and also during emergencies.

Cost estimate:

Table 1: Cost estimate of low cost toilet

Details	No. of units	Unit cost (in Rs)	Total amount (in Rs)
Toilet pan with p-trap (ceramic rural pan with deep slope)	1	250	250
Jiggery and jute bag for connecting the p-trap and pan			75
Squatting slab	1	300	300

Cement	½ begs	140	140
Masonry charges	1mason	350	350
Sand	3bond	100	100
Soling stone for pit lining		½ unit	300
Total			1515

Probable Design of Low Cost Toilet:

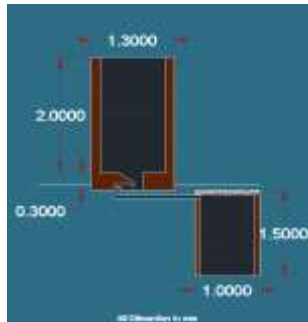


Figure 5: Toilet Cross-section

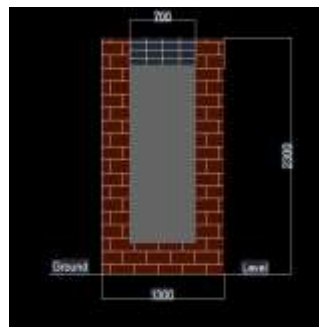


Figure 6: Front view of toilet

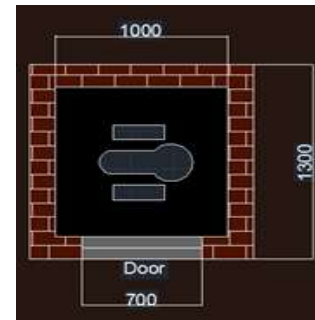


Figure 7: Top view of toilet

VIII. CONCLUSION

From this paper, we concluded that the five designs to be provided in the village are as follows: Design of Low cost Toilet, Design of shopping market, Design of Gas power generator, Design of public garden and Design of public library. Here, we had provided the solution for the method for waste water treatment and the design of low cost toilet out of all the problems in the village.

REFERENCES

1. ALLEN, C., BLANDY S. (2004): The future of city centre living: implications for urban policy. Centre for Regional Economic and Social Research, Sheffield Hallam University
2. ATKINSON, R. (2003): Introduction: misunderstood saviour or vengeful wrecker? The many meanings and problems of gentrification. *Urban Studies*, 40(12): 2343–2350
3. BIJAK, J., KUPISZEWSKA, D., KUPISZEWSKI, M. (2008): Replacement migration revisited: Simulations of the effects of selected population and labour market strategies for the aging Europe, 2002–2052. *Population Research and Policy Review*, 27(3): 321–342.
4. CASSIERS, T., KESTELOOT, C. (2012): Socio-spatial inequalities and social cohesion in European cities. *Urban Studies*, 49(9): 1909–1924
5. DANDOLOVA, I. (2003): Deurbanisation in Bulgaria: Challenges of transition and sustainable development. In: Eckardt, F., Hassenpflug, D. [eds.]: *Consumption and the post-industrial city* (pp. 127–140). Frankfurt/Main, Peter Lang.
6. HAASE, A., RINK, D. (2015): Inner-city transformation between reurbanisation and gentrification: Leipzig, eastern Germany. *Geografie*, 120(2): 226–250.

7. Dhaval M Patel, V M Patel, Abhijitsinh Parmar, Tsunami Evacuation System For Western Coast Of Gujarat In Porbandar City, ISER, 11th International Conference, New York, USA, 5th June 2015, ISBN: 978-93-85832-49-9. 15-19.
8. Dhaval M Patel, Abhijitsinh Parmar, Avadhkumar Radadiya, Mihirkumar Sheladia, Smit Sardhara, Tsunami Evacuation System For Western Coast Of Gujarat In Mandvi City, International Conference, Dubai 1st and 2nd January, 2017, Published In International Journal Of Management And Applied Science, 2017, 23-27.
9. Dhaval M Patel, Kushal Shah, Patel Yagnik, Radadiya Avadh, Smit Sardhara, Literature Review On Tsunami Evacuation System On Coast Of Diu, International Journal For Innovative Research In Science & Technology, 2017, 108-114
10. Dhaval M. Patel, V.M. Patel, Abhijitsinh Parmar, Bhupesh Katariya, Gautam Dadhich, Tsunami Evacuation System For Western Coast Of Gujarat In Okha City, International Conference On Multidisciplinary Research & Practice, Icmrp-2014, 411-414
11. Abhijitsinh Parmar, Dhaval Patel, Dron Chaudhary., Utilization Of Pond Fly Ash As A Partial Replacement In Fine Aggregate With Using Fine Fly Ash And Alccofine In HSC-Hards Concrete Properties, Issue 3 | Dec 2014, 74-77.
12. Abhijitsinh Parmar, Dhaval Patel, Experimental Study On High Performance Concrete By Using Alccofine And Fly Ash - Fresh Concrete Properties, International Journal Of Pure And Applied Research In Engineering And Technology, 2014, 43-51.
13. Abhijitsinh Parmar, Dhaval M Patel., Experimental Study On High Performance Concrete By Using Alccofine And Fly Ash - Hard Concrete Properties, International Journal Of Engineering Research & Technology, 2013, 3363-3366.

Website Reference

1. <http://ciiblog.in/new/wpcontent/uploads/freshizer>
2. http://whc.unesco.org/uploads/thumbs/site_1349_0002-750-0-20100730101627.jpg
3. http://wiiervis.nic.in/WriteReadData/UserFiles/image/PAs_Map_Database/images/India-Map.jpg,
4. <https://www.indianholiday.com/pictures/travelguide/other-images/map-80.jpeg>,
5. <https://www.google.co.in/maps/place/Dantali,+Gujarat>
6. <https://www.sswm.info>, <https://i0.wp.com/www.thewatertreatments.com>
7. vishwakarma yojna