

# Water and Sanitation in Slum Areas of Hyderabad



*Mrs Vijaylakshmi Koorpad*

Structural Engineer

Society for Intergrated Development In Urban And Rural Areas  
(SIDUR)

## Shelter Situation in India

### Geography and Administration

Housing is one of the basic human needs along with food clothing and education. Mankind has been evolving different kinds of shelter with the changing civilizations and time. Like any other developing country India too is passing through a phase of acute housing shortage.

India is a vast country with different languages, people, climatic conditions, cultural and religious back ground. The types of housing differ from place to place. Northern and northeastern regions are hilly areas; the middle is mostly plain with a desert on the western region. The southern India is a combination of plateau, plains and hills. India is surrounded by water on three sides and ocean in towards the south. The type and requirements of housing differ from place to place.

India is a vibrant democracy, then states and union territories. There are elected governments in all states and the popular government take into account the day to day needs of the people. Housing is an important sector and is a thrust area in the planning and implementation schemes. Guidelines for undertaking construction of houses in respective areas and especially in the areas prime to

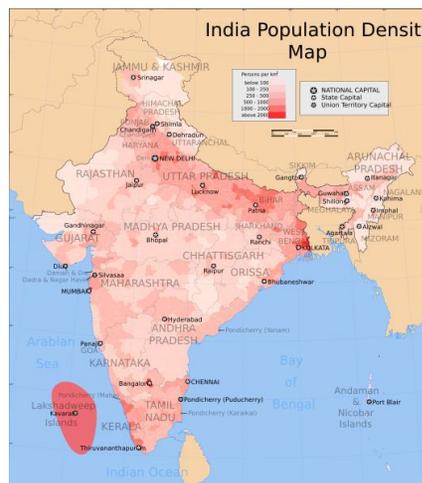
natural disasters like earthquakes, the government of the state will provide floods and cyclones..

## Demography and Health

The **Demographics of India** are overall remarkably diverse. India's population of approximately 1.13 billion people (estimate for March 10, 2008) comprises approximately one-sixth of the world's population. India is expected to overtake China by 2030 and will then be the most populated country in the world.

Population growth has grown from 443 million in 1960 to 1004 billion in 2000.

Map showing the population density of each district in India



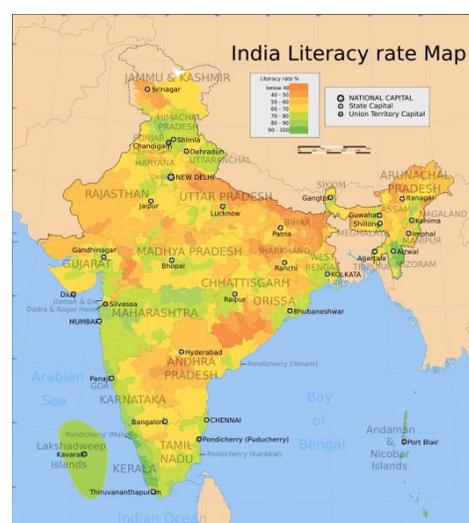
Source: Wikipedia, the free encyclopedia

Map showing the population growth over the past ten years



Source: Wikipedia, the free encyclopedia

Map showing the Literacy rate of each district in India



Source: Wikipedia, the free encyclopedia

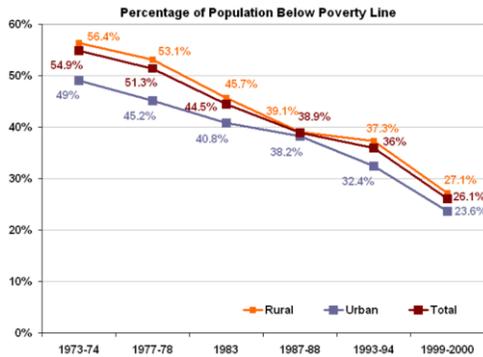
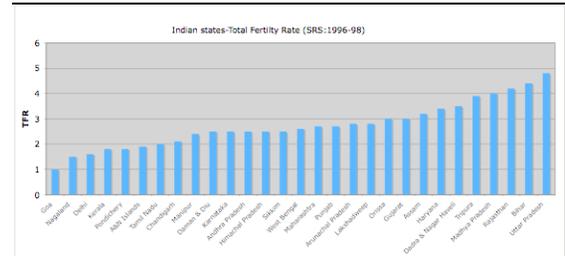


Chart showing the Total Fertility Rate of Indian states



Source: SRS Survey

## Economy

About 74% of the national populations live in about 5.83 lakh villages.

According to the latest official information 34.70% of country’s population happens to live below the poverty line and the majority supply of serviced land at affordable prices is a critical input for housing activity. It is widely recognized that the effective operation of land market has been affected by the existing legal and regulatory framework and lack of infrastructures. .

## Shelter Related Facts and Figures

### Access to Shelter

Notwithstanding the rapid stride in the field of building technology, providing shelter to the teeming millions at affordable cost remains a distant reality in most of the developing countries across the globe and India in particular. An estimate showed 55% of house holds in Mexico, 35% in Bangkok, 68% in Nairobi, 47% in Bogota, 60% in India are unable to afford the cheapest dwellings available in open markets and position might have deteriorated further.

### ***Housing Stock***

The grim housing situation in the country warrants some urgent and effective steps to combat the ever growing demand of housing. It calls for huge investment in housing sector. Non-availability of adequate funds with the Government exchequer is however, a major stumbling block in providing shelter to the needy poor in the country.

### ***Existing Housing Finance system in India***

The housing finance system, as it exists now, consists of two distinct components; the formal sector and the informal sector includes budgetary allocations of Central and State Governments, assistance from financial institutions like Life Insurance Corporations (LIC), General Insurance Corporation (GIC), Unit Trust Of India (UTI), National Housing Bank (NHB), Housing Development Finance Corporation (HDFC), Commercial Banks, provident funds, specialized housing finance institutions like housing finance companies and co-operative housing finance societies and employers in organized public and private sector extending housing advances and staff quarters facilities to their employees. The informal sector, on the other hand contributes to the housing finance system through various sources. These include sale of personal assets such as personal saving in cash and kind, sale of personal assets such as jewellery, land and agricultural property, and borrowings from friends, relatives and informal money lenders/credit unions.

### ***Housing deficit (quantitative and qualitative)***

Like any other developing country, India too is presently passing through as phase of acute housing shortage. As per the National Building Organization (NBO) there is a shortage of 31 millions dwelling units in the country out of which a shortage of 10.4 million units existed in the urban sector and the remaining 20.6 million units in the rural sector in 1990. The backlog has increased to 41 million by 2000. The picture is abysmally dismal at the lower end of the economic ladder, and thousands of people live in a state of absolute homelessness, while a lot of them are forced by circumstances to reside in desperately inadequate housing conditions, which threaten their health, security, safety and dignity. As per on estimate in 1993, there were three million

absolutely homeless households in the country and the number has further grown in the intervening period.

### ***Yearly percentage increase in number of dwelling units***

It is significant that against the annual population growth rate of 2% in the country, the number of residential buildings has increased at an annual rate of 0.5%. One Australia or Nepal, equivalent to a population of 17 million units, is being added to Indian population annually with the population explosion and rapid pace of urbanization, the problem of providing shelter to the poor is found to accentuate in the coming years. According to the Federation of Indian Chamber of Commerce and Industries keeping in view the existing housing crisis in the country present addition of 2.5 million units a year is hopelessly inadequate. The norm of five dwellings per annum per thousand heads of population set down for the developing countries has not been full-filled even up to the halfway mark. Some 110 million housing units are required to be constructed annually for meeting the household requirement of the country.

### ***Occupancy***

In the recent past there has been the fastest rate of urban growth of the country, in India in terms of the number of urban centers, which have come up as also the urban population. The number of metropolitan cities has gone up. According to 1991 census out of the total population 8144 million, 217 million lived in 3768 urban agglomerations and towns. One-sixth of the total urban population in small towns has been drastically reduced. The concentration of settlements in the country has thus, become lopsided. This factor alone led to the overturning the existing infrastructures in the cities. 41.62 million people in India live in shanty clusters equation on 11000 acres of prime government land. There are some 1,50,000 unauthorized colonies where in there are no roads, no electricity, water connections and no basic amenities worth the name. More than 12 million people live in such colonies.

### ***Housing Standard***

Almost all houses in the slums in large cities are in bad and dilapidated condition. The houses are usually inadequately ventilated. The design are such as to afford bare shelter, leading to acute congestion.. They are usually inadequately ventilated

and mostly single room units with inadequate space standards. Private toilets do not exist in a majority of slum areas and even common toilets are available only in a few. Most of the houses in slum areas do not have individual water supply. In some slum pockets, public taps do not exist but the number of persons using such taps is generally very high. The drainage system in slums is almost non-existent; situation gets worse during monsoon season when storm water finds its way into low lying settlement, making the conditions in slum areas extremely unhygienic. Besides, roads and lanes there are narrow and often unpaved. Road and street lightings are generally inadequate. There is a close relationship between environment and health.

### ***Floor area per person***

Floor area available to the average rural household was 38sqmts. while the average urban household had 37sqmts. This survey also reveals that the average household size in rural area was 5.15. And in urban areas 4.47.

### ***Tenure of house holds***

Statistics & age of houses – 30 years, rental periods – 11 months (- not many people will like to give their house on rent for a long period), and Commercial – 3 years.

### ***Rental (formal and informal)***

Formal - based on agreement/lease period 11-60 months, heavy advance, brokerage charges, not enough spaces for residential, more problems in cities, high rent & small space, Commercial is very costly

Informal – Low-income groups prefer no formal agreement illiterate people will be harassed depends on whims & fancies of owner landlord type of systems poor face lot of problems.

### ***Ownership (formal & informal)***

Formal –HIG self owned lot of money – Those settled abroad or business class more than two or three small percentage of total population.

Middle class – Salaried class, Houses bought on loans and savings some do it for investment purpose, 40% of housing under this category in India, and Government also providing lot of funds for loans .

LIG-Low cost houses-Mass housing schemes, Some times they get free under government schemes, Small areas, and Houses which cannot given on rent Informal no documents, local leaders distribute lands, patta pass books, some receive as gifts, and through inheritance.

***Housing affordability ratio***

Creamy layer has luxurious houses—affordability 100% more than two or three affordability is very high-2% of population. Where as, HIG – one house self built-well maintained affordability 100%-1% of population. And, MIG – mostly apartments based on loans affordability around 80% of people who have houses & 60% 20% of total population. But, LIG – mass housing 15% of population zero affordability but dependant on government & policies. Besides, Weaker sections – 10%.

***House price to income ratio***

In India several categories

- Creamy layer > 1 but 1% of population
- HIG = 1 but 4% of population
- MIG around 0.5 but 30% of population
- LIG < 0.25% but 50% population
- Weaker sections 0 but 15 % but 15% population

***Land (formal/informal)***

Land is one of the important prerequisites for planning. No housing is conceivable without land. In most of the countries in Asia, Africa and Latin America, including India there has been increasing pressure on the urban land over past three decades. In metropolitan cities, there are large areas where density of population is as high as 1000 to 2000 persons per hectare. Due to the increasing population pressure, the precious agricultural land on the outskirts of the urban agglomeration is being encroached upon to meet the growing demand of housing. On an average, 75000 hectares of agricultural land are being lost to cities and town annually.

### ***Housing construction***

Housing next to food and clothing is the most important need a human being. Besides giving shelter from natural elements and manmade hazards the house reflects his socio-economic status in society. For most families housing is perhaps major goal of family saving effort. It must be durable, as it is an outcome of a long drawn process of saving and aspiration. It must at least response to some extent, to the changing family needs and at times of a family emergency or need, be utilized as an economic asset in the market.

### ***Building Materials***

Alternative Building materials for Low cost housing- Substitute for Scarce Materials, Ferro cement, Gypsum Boards, Timber Substitution, Industrial Wastes, Agricultural Wastes, Future Strategy for promotion of Alternative Building Materials.

### **Access to and cost of basic services /infrastructure**

Housing is a complex entity comprising of the shelter set on a piece of development land serviced by road networks, water supply, sanitation, solid waste disposal and electrical services.

Thus, housing cost at the point of delivery may be broken up as cost of land and shelter.

The former comprises of Cost of land acquisition (including services and departmental charges); Cost of land development (site leveling, roads and landscape, all services networks, escalations, interests on capital, maintance charges administrative charges and contingencies). Shelter cost can be broken up as: Cost of civil works including all contractor's profit and overheads comprising of the structural finishing components; Cost of services at building level which consists of water supply, sewerage, storm water drainage and electrical. Design, construction management, contractors profit and other charges.

### **Access to and cost of Education**

average education of qualification of Indian citizen is 10<sup>th</sup> class. most of them are not aware of government policies, acts, rules and regulations. no one is aware of

bye-laws and building approval process. government is taking no special interest to educate public. And therefore the access to education is very poor.

## Housing Policy

### National Housing Policy Recommendations

The National Housing Policy has stated as one of its five major goals, the need to promote use of appropriate and energy saving materials and cost-effective technologies. To achieve this goal, certain steps related to urban housing have been recommended by the policy, which are as under:

- Stimulate the increased production of materials like cement, steel and bricks as part of the industrial policy, promote small-scale industries producing building materials, economize the use of scarce building materials, promote low cost and environmentally appropriate technology.
- Encourage public and private construction agencies to use of materials made out of industrial and agricultural wastes, local resources etc.
- Select, extend and promote proven technology and building materials, and use materials conforming to standards and quality construction through the efforts of Building Materials and Technology Promotion Council and the state governments: provide financial and other assistance to entrepreneurs for their manufacture and marketing.

### ***Role of the building centers in achieving policy objectives***

Though research institutions have been working in the areas of alternative and cost effective technologies for past 30 years, and built demonstration projects using the same, very little input has been felt, in the real world. The following are were the main thrust areas: Technology transfer from lab to land by dissemination information on cost-effective technology; Skill up gradation and training of masons, artisans, carpenters on one end and professionals and entrepreneurs on the other for production and practice of Cost-Effective Technologies; Manufacture, production and sale of cost-effective building materials; Create a pool of trained construction force to meet diverse need of all housing development activity undertaken by public and private agencies. And , housing and building guidance and counseling.

## Actors in Shelter Delivery and their Roles

The grim housing situation in the country warrants and effective steps to combat the ever-growing demand of housing. It calls for huge investment in housing sector. Non-availability of adequate funds with the Government exchequer is, however a major stumbling block in providing shelter to the needy poor in the country.

Compared to the western scenario, the existing pattern for housing finance in India presents an entirely different picture. According to an estimate, only about 10% of the houses purchased in India are financed through institutionalized and formal superstructure is of relatively recent origin.

The housing finance system, as it exists now, consists of two distinct components; the formal sector and the informal sector includes budgetary allocations of Central and State Governments, assistance from financial institutions like Life Insurance Corporations (LIC), General Insurance Corporation (GIC), Unit Trust Of India (UTI), National Housing Bank (NHB), Housing Development Finance Corporation (HDFC), Commercial Banks, provident funds, specialized housing finance institutions like housing finance companies and co-operative housing finance societies and employers in organized public and private sector extending housing advances and staff quarters facilities to their employees.

The informal sector, on the other hand contributes to the housing finance system through various sources. These include sale of personal assets such as personal saving in cash and kind, sale of personal assets such as jewellery, land and agricultural property, and borrowings from friends, relatives and informal money lenders/credit unions.

## Shelter Design

### Physical Planning

Depends on the size of plot persons involved, finance and means. Also, availability of building material and labours, architects, designs, landscapes, government approval process, bye-laws, land used pattern and the taste of the owners. And, It can depend on the type of houses. Luxury, Duplex, Apartments, low-cost or mass housing.

## Land Use

Planning of Urban land-land acquisition. And, Urban land ceiling and regulation act. As well as that, Effectiveness of bye-laws.

## Population Density

Rural migration to cities, especially by farming households and tribal minorities' has been caused by wide spread poverty in the village poverty' on the other hand, has often been off-shoot of tremendous socio-economic disparity prevailing in our villages in some states, continuance of semi-feudalistic pattern of society arising out of non-implementation of the norms of land reforms has aggravated the rural poverty, and has forced the rural landless, devoid of any means of livelihood in their villages, to migrate to cities for their subsistence.

In 1991, about one-fourth of the country's population was concentrated in 1.5% of its total population. In metropolitan cities, there are large areas where density of population is as high as 1000 to 2000 persons per hectare. Due to the increasing population pressure, the precious agricultural land on the outskirts of the urban agglomeration is being encroached upon to meet the growing demand of housing. On an average, 75000 hectares of agricultural land are being lost to cities and town annually.

## Residential Densities

The following densities are normally considered as optimum: single storeyed houses about 50 – 65 houses/ gross hectare; two storeyed houses around 75 – 100 houses/gross hectare; three storeyed houses about 100 – 125 houses/gross hectare; four storeyed houses roughly 125 – 150 houses/gross hectare; and five storeyed houses 150 houses per gross hectare.

In above densities are adhered to and layouts are prepared by qualified town planning agencies, it may be feasible to ensure adequate open spaces, wide roads, parks and other sites for communal facilities consistent with land use economy.

## Shelter Quality

It is the head most important. Besides, houses are construction for lifetime enjoyment. Moreover, quality depends upon material used, workmanship, purposes and practiced. As well, quality control and strict compliance to norms and procedures should be given highest importance. Last but not least, there is a need for alternative construction systems.

## Function

It is a intended used of the building. And, building constructed should function in their expected way. As well as that, Multi disciplinary rules and switched optioned rule are important in places like India. Further, sometimes houses are used for stay, office and manufacturing purpose simultaneously. Therefore design should take into account not only the intended use but also should take care of the possible charges in use.

## Safety

It cannot be comparing adoption of low-cost house. In addition, Limit state of safety as mentioned in DIS 456. It should be taken care of. All the guidelines of NBC should be taken into account. Moreover, Highest stated of safety should be incorporated in design.

## Comfort

The building should be so design that it gives maximum comfort to maximum number of people and any given point of time. It is that feature which every individual will like to have. Therefore it should get into planning, operation and construction.

## Social Inclusion

It should take care of all people in society. Cultural, Religions, and traditional issues and concern should be incorporated in the shelter design. So that and inclusive society forms in.

## Gender Issues

Any construction whatsoever residential or commercial should take care of addresses, gender issues properly. It should be ensure that interest of women and safe guarded. These are usually neglected in the developing countries.

## Sustainable Development

Any policy process should be adopted and incorporated in the design from a long term prospective. There is a need of vision and mission sustainable of a system of over a period of time is important so that it involves in practice.

## Norms and Codes

Concrete is designated in seven grades, namely M 10, M 15, M 20, M25, M 30 M 35 and M40. The letter M refers to the mix and number indicates the specified compressive strength of that mix at 28 days expressed in  $N/mm^2$ . For lean concrete bases and simple foundations for masonry walls, M 5 and M 7.5 designed. Grades of concrete lower than M 15 are not to be used in R.C.C. work. For general guidance, the nominal mixes correspond approximately to the different grades as follows:

M5 - 1:5:10 , M7.5- 1:4:8, M10 - 1:3:6, M15 - 1:2:4 ,  
M20 - 1:1 1/2 :3 M25- 1:1:2

## Organisation

### Society for integrated development in urban and rural areas (SIDUR)

Is the brain child of like minded individuals who have an understanding of the rural and urban linkages and also acknowledge the imperative need for a comprehensive integrated development approach to tackle complex Human problems.SIDUR came into existence in the year 1990 to address the problems plaguing street children,urban and rural poor and dalits. .

### Our Main Activites

- HIV/AIDS Prevention among slum dwellers,street children,sex workers and truckers

- Childline programme
- Street children rehabilitation
- Coolie weavers rehabilitation
- Slum development programme
- Dalit empowerment programme
- Community based rehabilitation
- Braille book production
- Water and sanitation
- Housing

## Shelter Problem

There is a general feeling amongst professional groups, both government and private that these technologies are perhaps not as cost effective as they claim to be. There is also the question of their durability, functional performance capabilities, both structural and climatic, and finally their life cycle cost in terms of maintenance and repair. Finally, there is the question as to why it has not found wide application if they are cost effective.

In terms of availability of building materials, country being endowed with good quality bricks, stone like quartzite and sand stone, it is important to identify and classify the innumerable systems available for the basic structure of shelter. It is proposed to evaluate the system available on the basis of cost, performance and inherent construction aspects so that one is able to identify those options which could be used so that the cost of shelter is optimized.

## Cost of optimization

It is apparent that there are several ways of optimizing shelter cost such as: By optimal architectural design the form of cluster layout, cluster and unit plan, to achieve maximum sharing of walls and common areas optimal unit design with respect to optimized shape of rooms, minimizing circulation and maximizing shared walls. By using alternative cost effective construction systems for building elements like foundation, wall opening, door, window, flooring and finishing.

## Action Plan

Sanitation is an important public health measure, which is essential for the prevention of disease. Along with covered sewers it is important that people have access to flush toilets and also latrines that are used only on household, and are ventilated and designed to isolate waste from the surrounding environment.

### **The six slums are :**

- Janatha nagar
- Vinayak nagar
- Datatreya nagar
- Ashaya nagar
- Kamala nagar
- Naodaya nagar

### Objectives

- Bring together complementary expertise in water and sanitation
- Focus where investment can be most effective.
- Develop a realistic developmental model.
- Provide affordable water and sanitation services.
- Engage local communities from the start.
- Promote community health.
- Design for positive environmental impact.
- Ensure long term sustainability through comprehensive capacity building.
- Provide a high quality service to local service authorities
- Share learning and experience.

### Methodology

#### Advocacy

- Generating felt demand for sanitation facilities through
  - Creation of awareness for eliminating open defecation to minimize risk of contamination of drinking water sources and food.
  - Health education
- Attitudinal change including superstition/de-addiction/family Planning

- Eradication of disparities (economic & social)
- Ownership building
- Women's participation

### Training

- Planning & Implementation of the project
- Water Management
- Financial Management (Budgeting & Accounting)
- Monitoring and Evaluation of the project
- Ensuring sustainability of the project.
- Vocational guidance and training to members of SHGs for sustainable livelihood.

### Capacity Building

- Build capacity of local communities particularly women and motivate them to participate fully in the implementation of the project.
- Women's empowerment through savings and credit programs through Self Help Groups and their involvement in decision-making processes.
- People's participation in decision making and community self governance

### Technical support

- Encouraging cost effective and appropriate technologies in sanitation.
- Monitoring & Evaluation.
- Helping slum dwellers in identifying water sources and selecting appropriate scheme for water supply.

### Issues Faced By The Community

- Sustainable use of water
- water pollution and contamination
- financial resource constraints
- inadequate delivery mechanisms and infrastructure
- inefficient institutional and governance structures
- socio-economic barriers

- inadequate space and congested surroundings

## Impact

SIDUR recognized the importance of improved hygiene along with sanitation in preventing water-borne diseases. To motivate the behavioral changes necessary for improved hygiene and sanitation, SIDUR enlisted the help of local leaders and women groups from the slums.

Women from SHG's were taken as Volunteers, or change agents, and were trained to raise awareness about hygiene related issues and to motivate the consumption of safe drinking water in their community. Apart from participating at local events conducted by SIDUR's change agents made door to door visits conducting demonstrations and promoting proper hygiene and sanitation. Being from the project community, these change agents had both an understanding of local health issues, and an established relationship based on trust within the community educational materials and posters linking simple hygienic behavior to clean water and food were designed for low-literacy populations with the input from the volunteers. These materials focus on a simple message: the adoption of hygienic practices that impact on water and food safety, and the consistent and exclusive consumption of safe drinking water. The next step in SIDUR'S approach was to improve hygiene and sanitation conditions focusing on mobilizing the community. One of the essential techniques was to identify to increase community involvement in making improvements to common areas in the slums. By providing covered garbage bins and undertaking minor repairs to key water sources, These improvements were linked to hygiene and sanitation messages to bring about a sense of shared responsibility in the community to keep these areas clean. Community involvement in sanitation for health and hygiene was built through a sustained campaign that broadly addressed three major areas health issues that arose as a result of poor sanitation, the gender impact of poor sanitation with women suffering from lack of privacy and also being burdened with additional tasks, and the economic costs imposed by poor sanitation in terms of increased disease and mortality. The outcome of our work so far in three slums has given us a better perspective in understanding the concept of hygiene and sanitation in the urban slums of Hyderabad.

The problems identified during our work process are as follows;

### Problems identified / findings

- Poor condition of the slum dwellers
- Lack of access to safe water and sanitation
- Latrines either employing into open drains or not connected to any drain.
- Water and sanitation related diseases more rampant.
- Men and women are ignorant of developmental plans
- Unhygienic washing habits of the people.
- Women empowerment and mobilizing the community in related social activity.
- Geographical and terrain factors hindering toilet construction (Vinayak Nagar).

Congested homes with little room for construction (Janathanagar) These problems were analyzed and accordingly work was planned. Our strategy encompassed the below said points.

- Access to safe drinking water remains a challenge
- Need to provide water free from harmful pollutants and high level of salinity.
- Poor maintenance leading to defunct infrastructure.
- Lack of awareness on the importance of sanitation.
- To increase advocacy and strengthening of S.H.Gs.

The work done so far has been good but we need to develop sustainability and strengthen the community as a whole and sensitize them towards good health, education, life expectancy, well being and social development.