HUDCO AWARDS FOR BEST PRACTICES TO IMPROVE THE LIVING ENVIRONMENT

2015 - 16

A COMPENDIUM OF THE AWARD WINNING ENTRIES AND OTHER ENTRIES RECEIVED FOR THE HUDCO BEST PRACTICES AWARD

HUDCO’s HSMI PUBLICATION
HUDCO Awards for Best Practices to Improve the Living Environment

A compendium of the award winning and other entries received for the HUDCO Best Practices Award for the year 2015-16

HUDCO’s HSMI Publication

HOUSING AND URBAN DEVELOPMENT CORPORATION LIMITED
NEW DELHI – 110 003
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FOREWORD

Urbanisation is an inevitable and global phenomenon, impacting human settlements worldwide. With half of the world’s population being urban, twenty first century is poised to be the century of cities. The rapid growth of urban settlements impacts almost all aspects of human life and has also brought in many challenges, particularly for our cities and towns. World over, the urban settlements are battling challenges related to scarcity of resources, strained and inadequate infrastructure, energy shortage, environmental degradation, increasing demand for livelihoods and access to better facilities.

In this context, globally, Urban administrators, professionals and leaders are looking for innovative solutions to traditional problems, for smart and sustainable growth. In India, Urban Local Bodies, State Govt departments and national level organisations are looking for sharing ideas, solutions and learning in terms of best practices in urban project formulation and implementation, in their search for implementable, replicable and smart urban solutions.

HUDCO, in line with its mission and vision to Housing and Infrastructure sector, encourages and gives recognition to the best practices in various urban development related sectors throughout the country through its “HUDCO Awards for Best Practices in Living Environment”. The awards are judged by an independent jury, comprising of eminent professionals from housing and urban development sectors. The Human Settlement management Institute, (HSMI), the Research and Training arm of HUDCO, has prepared the compendium of the winning entries and other entries received for this Award.

These awards were announced in October 2015, and entries were invited from various stakeholders through our network of Regional Offices in seven categories; viz. (i) Urban Governance; (ii) Housing, Urban Poverty & Infrastructure; (iii) Urban Transport; (iv) Environment Management, Energy Conservation & Green Building; (v) Sanitation; (vi) Urban Design & Regional Planning, Inner City Revitalization & Conservation; and (vii) Disaster Preparedness, Mitigation & Rehabilitation. Awards for the year 2015-16 were presented to 8 winning organizations, including one joint award, on HUDCO's Annual Day function held on 25th April 2016.

This intervention is to bring together different practices prevalent at various levels of governments and private enterprises, involved in housing and urban development activities in India, on a single platform. This effort of HUDCO’s HSMI in bringing out this compendium will enhance the knowledge base of many organizations and encourage them in replicating the same, for bringing improvements in the approach, delivery and management of various projects in our country. I am confident that these best practices will be useful and fulfil the purpose of raising awareness among policymakers, experts, practitioners and public at large.

Dr. M Ravi Kanth, IAS (r)
Chairman & Managing Director
ABOUT THE HUDCO AWARD FOR BEST PRACTICES – 2015-16

For the year 2015-16, entries for HUDCO Award for Best Practices were invited in the following categories:

1. Urban Governance;
2. Housing, Urban Poverty and Infrastructure;
3. Urban Transport;
5. Sanitation;
6. Urban Design and Regional Planning, Inner City Revitalization and Conservation; and
7. Disaster Preparedness, Mitigation and Rehabilitation.

During the year, we have received 52 entries for HUDCO Best Practices Award. A Committee was constituted consisting of eminent professionals, who scrutinized each entry in detail and recommended the following 9 agencies for conferment of HUDCO Award for Best Practices for the year 2015-16. These awards were awarded to the concerned agencies on the occasion of HUDCO’s Annual Day on 27th April 2016 by the Hon’ble Minister of State for Housing and Urban Poverty Alleviation in the presence of CMD, HUDCO and Directors of HUDCO.

The names of agencies who have been felicitated with Best Practices Award and their works are listed below:

<table>
<thead>
<tr>
<th>Agency/State holder</th>
<th>Name of the Entry with Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chandigarh Housing Board, Chandigarh</td>
<td>Basic Services to the Urban Poor (Affordable Housing Improved Service Delivery Initiatives) under the Category of “Housing, Urban Poverty &amp; Infrastructure”</td>
</tr>
<tr>
<td>Bengaluru Metropolitan Transport Corporation Ltd, Karnataka</td>
<td>Traffic &amp; Transit Management Centres and GPS based initiatives from Transport Department under the Category of “Urban Transport”</td>
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<tr>
<td>Cashutec Building Centre, Raichur, Karnataka</td>
<td>Specialized building Centre for promoting fly ash utilization technologies for sustainable construction under the category of “Environmental Management, Energy Conservation and Green Building”</td>
</tr>
<tr>
<td>Directorate of Urban Development &amp; Poverty Alleviation, Govt of Mizoram jointly with Young Mizo Association (YMA)</td>
<td>Low Cost Sanitation solutions under the Category of “Sanitation”</td>
</tr>
</tbody>
</table>
I congratulate all the award winning agencies and other stakeholders who actively participated in this process. I hope, with this compendium, other agencies will get encouraged and take interests and initiatives towards their creativity in urban design. This practice would surely boost morale of innovative designers to participate in the competition with their potential talents. This would be a platform for the Architects, Engineers and Town Planners to demonstrate their best efforts in innovation and design to replicate and set an example for others to emulate.

N.L. MANJOKA
Director (Corporate Planning), HUDCO
ACKNOWLEDGEMENTS

HUDCO’s Human Settlement Management Institute (HSMI) would like to acknowledge all the Organizations/Institutions, NGOs’, Private Sector and other agencies, which have responded to our request for submission of entries for consideration of Award. Their efforts to participate by way of submitting the entries in the required format have helped us to organize this activity in a sustained manner and we deeply appreciate and acknowledge their efforts. The support provided by Regional Offices have been commendable, who have encouraged the agencies in their region to participate. We would like to acknowledge the efforts put in by the Regional Heads and teams at Regional Offices for giving their ample support.

We highly acknowledge the guidance and encouragement given by CMD, HUDCO to HSMI team and deeply cherish his enthusiasm in carrying out this activity.

The Expert Committee of the eminent professionals under the Chairmanship of Prof. Chetan Vaidya have devoted their valuable time in evaluating the entries. We would like to express our sincere gratitude for their guidance and the manner in which the task has been completed.

HSMI team Coordinator Shri Surendra Kumar, Fellow with the help of other faculty i.e. Dr. A.K. Sen, Fellow, and Ms. Arunika Sharma (Research Associate) & Ms. Ruchi Prasad (Research Associate) have made commendable efforts to organize the entries received and take follow up at all stages and also in publication of this document. Secretarial Assistance extended by Shri Jeewan Lal, Asstt. General Manager(Sectt.) is also appreciated.

Dr. H.S. Gill
Executive Director (Training), HSMI
Award Winning Entries
CHANDIGARH HOUSING BOARD

The Best Practice award under the category of “Housing, Urban Poverty & Infrastructure” was given to Chandigarh Housing Board, Chandigarh for their initiatives in Affordable Housing and Improved Service Delivery in the Chandigarh City.

AFFORDABLE HOUSING AND IMPROVED SERVICE DELIVERY IN THE CHANDIGARH CITY

SUMMARY

Jawaharlal Nehru National Urban Renewal Mission (JNNURM) is a massive city modernization scheme launched by the Government of India. The scheme was officially inaugurated by the Prime Minister, Manmohan Singh on 3rd December, 2005 as a programme meant to improve the quality of life and infrastructure in the cities.

JNNURM is a huge mission which relates primarily to development in the context of urban conglomerates focusing to the Indian cities. JNNURM aims at creating ‘economically productive, efficient, equitable and responsive Cities’ by a strategy of upgrading the social and economic infrastructure in cities, provision of Basic Services to Urban Poor (BSUP) and wide-ranging urban sector reforms to strengthen municipal governance.

Slum Rehabilitation Programme is being implemented by the Chandigarh Housing Board. The project aims at providing hygienic and better living to 23841 slum dwellers spread over 18 notified slums in the City. The two Sub Schemes namely ‘Construction of 6368 Small Flats Phase-I’ & ‘Construction of 19360 Small Flats Phase-II’ approved by the Government of India under JNNURM. Revised three DPRs for Phase I, Phase II & Phase III amounting to Rs 1021.48 Crore were approved by GOI in February, 2012. With the construction of 25728 Small Flats under the scheme, the city of Chandigarh will become a Slum Free City.

BACKGROUND

The scheme under JNNURM (BSUP) is being implemented to provide:

- Affordable housing
- Services for Urban Poor
- Improved services delivery initiatives
Slum Rehabilitation Programme – Key Features

1. One time solution to the existing problem of squatters and slum settlements.

2. Allotment initially on license fee basis (Rs 800/- per month), ownership rights to be provided after twenty years so as to ensure that beneficiaries does not sell its flat and goes for encroachment.

3. The design of the dwelling unit developed in a way so that there are no incidental spaces, leaving no scope or possibility of violations and/or unauthorized occupation of government land.

4. Each dwelling unit to have individual water, electric and sewer connection

5. Allotment on joint-name of both husband and wife for social security

6. Open play grounds and parks

7. Green Cover

8. 8448 Small flats at Dhanas and 4960 flats at Maloya-I are being developed as integrated township with all the benefits of required social infrastructure, Anganwaris, elementary schools, facility of dispensary, Fair Price Shops, police post, skill development centers for SC/ST & minorities etc. in place.

KEY DATES

<table>
<thead>
<tr>
<th>Dates</th>
<th>Significance/ Achievements</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 2006</td>
<td>Two Schemes under JNNURM for construction of 25728 Small Flats were approved by MoHUPA, GoI</td>
</tr>
<tr>
<td>February 2012</td>
<td>Revised three DPRs for Phase I, Phase II &amp; Phase III amounting to Rs 1021.48 Crore approved by MoHUPA, GoI</td>
</tr>
<tr>
<td>October 2012 &amp; December 2012</td>
<td>Administrative Approval was received from GoI MoHUPA for Phase-II. For Phase-I &amp; III.</td>
</tr>
<tr>
<td>September 2013</td>
<td>Prime Minister handed over the keys of small flats to the beneficiaries.</td>
</tr>
<tr>
<td>June 2015</td>
<td>Minister, MoHUPA handed over the keys of small flats to the beneficiaries.</td>
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</table>
SITUATION BEFORE THE INITIATIVE

The Chandigarh Administration undertook several rehabilitation programmes to provide better living conditions to the bulk of the slum population. During year 1970, a survey was conducted to determine the extent of jhuggies and the number of jhuggies was placed at 4454. This number increased to 8003 by 1974. In year 1975, Chandigarh Administration, promulgated a scheme to rehabilitate slum dwellers. Tenements were constructed in Sector 26, Sector 29, Sector 30, Sector 32 and Sector 38 to rehabilitate these slum dwellers. Chandigarh Administration entrusted the task of rehabilitating the slum dwellers to Chandigarh Housing Board (CHB) in year 1976. The Board has since been taking up rehabilitation programmes from time to time and has so far catered to the needs of 35554 families by providing EWS units, One Room Tenements and Sites & Services.

ESTABLISHMENT OF PRIORITIES

The houses constructed under the earlier rehabilitation programmes were provided to the slum dwellers at highly subsidized prices. With the result, many beneficiaries sold the houses in the market at premium and went back to the slums. A course correction therefore was felt necessary in the existing Slum Rehabilitation Programme.

Chandigarh Administration decided to provide accommodation (in the form of one room flats) on license fee basis to the slum dwellers. Based on the socioeconomic survey conducted by IDFC, the paying capacity of slum dwellers has been estimated at Rs 1,000/- p.m. In order to ensure that there is no future encroachment on Government land, it has been decided that any family which has not been included in the biometric survey shall not be eligible to get a housing unit under this programme.

With these aims in view, the ‘Chandigarh Small Flats Scheme- 2006’ was notified by the Chandigarh Administration.
FORMULATION OF OBJECTIVES AND STRATEGIES

The Chandigarh Housing Board was designated as the implementing agency to undertake the task of making the city slum free with innovative and sustainable housing, so that the slum dwellers post rehabilitation live a dignified life. To implement this ambitious slum rehabilitation programme, the UT Administration finalized a project under the Basic Services to Urban Poor (BSUP) component of the Jawaharlal Nehru National Urban Renewal Mis

UNIQUE FEATURES OF THE SCHEME

The Scheme envisage for providing Affordable housing, Services to Poor, Improved service delivery initiatives, Education and Health.

i. The dwelling unit shall not be allotted on ownership basis but on license fee basis (Rs 800/- per month). This will check the existing practice of selling the site / dwelling unit in the market and then going back to the slums.

ii. The option of ownership on payment of balance amount will be given to the beneficiary after a period of twenty years. This will ensure that only genuine allottees under the scheme are provided property rights.

iii. Recognizing the community oriented life style to which the beneficiaries are normally accustomed, the layout adopts the street interface approach with a common front court.

iv. The policy recognizes the need to minimize the extent of geographical dislocation. Therefore where ever possible, the families are being rehabilitated on land near their present habitations.

v. Development of dwelling unit is planned in such a way so that there are no incidental spaces, leaving no scope or possibility of violations and / or unauthorized occupation of govt land.

vi. Development will include large chunks of open areas and parks along with all supporting infrastructure of health care, education, shopping community centre etc.

vii. Each dwelling unit to have individual water, electricity and sewer connection.

viii. For creating a reliable and dependable data base for allotments and all future management of the scheme, biometric identification of the beneficiaries will be resorted to.
MOBILIZATION OF RESOURCES

Chandigarh Housing Board is the nodal agency for the implementation of the Chandigarh Small Flats Scheme for construction of 25728 Small Flats. All related work pertaining to the implementation of the scheme right from preparation of DPRs, tender documents, cost estimates, processing of tenders etc. was undertaken in house.

The works under the scheme are being implemented through a transparent tendering process. For this scheme Rs 436.30 has been approved by the Govt. of India under JNNURM and Rs 585.18 Crore is being provided by the Chandigarh Administration as State Share.

PROCESS

↔ Some of the greatest challenge for the Administration had been to make the slum dwellers adapt to new lifestyle which primarily included paying the rent regularly, not misusing the premises for commercial activities or sub-letting or reselling and motivating them for paying the electricity / Water, which they were accustomed of availing free-of-cost in slums through unfair means. In allotment of these dwelling units, care has been taken to make both husband and wife as joint owner of the dwelling

↔ Change in Mode of Allotment

Every allotment is now being done on affordable monthly license fee basis with the option of owning the house after twenty years.

↔ Deploying of IT for Effective Management

Detailed bio-metric survey of the 18 notified slum colonies helped ascertain exact number of families living there, which included digital photograph of the family and electronically captured thumb and finger impressions of the head of the family.

↔ Simplification of Procedures

Allotment done on-the-spot through a camp on site in the presence of officials (Chandigarh Housing Board, Estate Office Chandigarh, Municipal Corporation, Chandigarh, Engineering Department, Chandigarh, A scheduled commercial bank, Notary public). This has helped reduce time, money and efforts.

↔ Simplification of Forms

i. A simple one page application form is devised with no attachments, enclosures or proofs

ii. Single page allotment letter, possession slip, and license deed simplified the process time.

↔ Relocation plan

i. Scientifically prepared detailed relocation plan prepared to minimize dislocation and intimated well in advance to eliminate any element of surprise

ii. Land freed from slums secured and put to optimal use.
RESULTS ACHIEVED

• CHB has completed the construction of 12736 Small flats under the scheme out of which about 12000 Small Flats have already been handed over to the beneficiaries.

• About 40,000 people who have recently shifted to the newly constructed houses at Dhanas are enjoying all the basic amenities of water supply, electricity, sewerage, open spaces etc.

• To make sure that the occupants of the newly allotted flats post shifting are also able to enjoy all the benefits of required social infrastructure, Anganwaris, elementary schools, facility of dispensary, Fair Price Shops, police post, skill development centers for SC/ST & minorities etc., these facilities have also been provided in this new habitat. Long term plans for creating the required social infrastructure have also been worked out.
• Beneficiaries from Colony 5 have been shifted to 8448 small flats at Dhanas. By this shifting of beneficiaries about 100 Acres of land worth Rs. 1000 crore has been got free from encroachments. Shifting all the 23841 families from 18 colonies under this rehabilitation scheme Chandigarh will achieve the status of “Slum free City”.

TRANSFERABILITY

CHB is the only organization where the property rights are initiated to be transferred to the beneficiaries after 20 years of continuous occupation of the property as compared to other States where the property.

The scheme envisages the allotment of DU to the beneficiaries on a license fee model that has been appreciated by the Govt. of India.

LESSONS LEARNED

The transition from slums to small homes, has also translated into better employment opportunities, more community participation, better education for children and better health.
NAVI MUMBAI MUNICIPAL CORPORATION

The Best Practice award under the category of “Environmental Management, Energy Conservation and Green building” was given to Navi Mumbai Municipal Corporation, Maharashtra for their initiatives in Green Buildings and Green Building Indicators provided in the Corporation’s Office Building.

CONSTRUCTION OF GREEN BUILDING: HEAD QUARTER OF NAVI MUMBAI MUNICIPAL CORPORATION

SUMMARY

NMMC planned to build their Head office at Plot No. 1 & 2, Sector 15A of CBD Belapur, Navi Mumbai. The project site is spread over 27422 Sq.mt. of area. Prime motive of the building is to bring all departments of NMMC at a central location easily approachable to people.

BACKGROUND

The proposed project is Head Office Building for NMMC. The building is developed on a barren land. The Plot area initially identified for the project was 20000 Sq.mt. However, the open ground Plot No 2 that lay between the Palm Beach side service road and the Project site was also later developed as part of the Green Foreground for this Civic Head quarter. No civil construction is carried out in the additional area (plot 2). The total plot area is therefore 27422 Sq. mt. Building footprint of the main structure is 6700 Sq.mt and it is a Basement + Ground + 7 storey structure which consist of open offices, cabins, meeting rooms, conference rooms, GB meeting Hall, Amphitheatre, cafeteria, Training Hall etc.

A parallel service road has been developed to access the site. This avoids traffic interference on the heavy traffic Palm Beach Road and Amra Marg. The location is well connected by bus routes with local railway stations and other parts of Navi Mumbai.
The project aims to achieve a LEED INDIA Gold rating under NC category. All the credit requirements have been incorporated in the respective design documents.

**KEY DATES**

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<th>Dates</th>
<th>Significance/ Achievements</th>
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</thead>
<tbody>
<tr>
<td>02nd March 2009</td>
<td>Main Structure Work Start</td>
</tr>
<tr>
<td>08th August 2012</td>
<td>Dome PT Slab casting (42 m Span)</td>
</tr>
<tr>
<td>18th Feb 2014</td>
<td>Inauguration of Head Quarter</td>
</tr>
</tbody>
</table>

**Green Features considered for the Building:**
- Efficient building envelope with high performance glazing
- Efficient lighting system
- Energy Efficient Water cooled chiller
- Variable speed chilled water pumping system
- Variable Frequency drives on Air Handling units
- Low-flow plumbing fixtures
- Water Reuse
- Rain Water Harvesting
- Ample landscape
- Use of low VOC paints, adhesives, sealants

**PROCESS**

The Building is an iconic, ambitious and mega project in nature. The building and its interior spaces are planned for present space requirement and future additional space requirements in the front of Cabins, Cubicles and Work stations.

The architect of the project has prepared the conceptual layout plan taking into account NMMC’s space required at that time, prevalent materials and technologies. In order to make the project futuristic and sustainable, the advancement in technology and materials necessarily brought may modifications into project.

**This Building can be defined in three categories:**

1. **Green building:**

**Structure**
- Efficient building envelope with high performance glazing: Double glazed Units
- Recessed Windows
- Ventilated Façade system: Dry cladding with aluminum and Composite stone.
- Use of low VOC paints, adhesives, sealants
- Use of Local Material and Material with Recycled contents
- Reflective Tiles, GRC on Open terraces with High SRI

**Electrical Systems**
- Use of LED.
- Use of Reflector light fixtures for enhance LUX levels.
- Occupancy sensor based lighting in critical area
- Efficient Façade and Area Lighting

**Plumbing Systems**
- Hydro pneumatic water supply system for water usage only as per requirement
- Low-flow plumbing fixtures.
- Sensor based / push button type water taps
- Water Reuse : STP treated water use
- Rain water harvesting : Rainwater collection tank

**Centralized Air Conditioning system**
- Energy Efficient Water cooled chillers
- Variable speed chilled water pumping system
• Variable Frequency drives on Air Handling units
• CO2 sensors at all critical locations
• The refrigerant used in the Water Cooled Chiller is R-134A which is HFC based.

Landscape Design
• Native and adaptive vegetation: As per site soil and water level condition
• Ample landscape: to prevent soil erosion, provide shade to parking areas etc.
• Grid pavers with Grass in parking areas to reduce hard paved areas and allow water percolation.
• Installation of Biogas Generation plant
• Irrigation system with Drip and sprinklers

Adopted State of Art Technology
• The proposed building has achieved 22.65% improvement over the ASHRAE base building and the project will achieve 4 points under Optimize energy performance of LEED INDIA rating system for New Construction.

2. Low Maintenance Building
Gypsum is used instead of Internal plaster to avoid future internal painting problem.
• Dry stone cladding and glaze cladding is used on the external face instead of external sand face plaster to avoid leakage.

3. Intelligent Building
Intelligent Building management systems are used to either monitor and control various intelligent system in the building such as Pneumatic Water supply, CCTV surveillance, Access control, Façade lighting, AC system, Fire detection and Alarm, Public address system etc.

RESULTS ACHIEVED
The Building is planned in a circular form and all major public interface departments occupy the ground floor to ensure uninterrupted movement of general public; also to avoid load on the lifts. Engineering and administrative departments are planned on second and third floor respectively. The General Body & Mayor, Commissioner Offices captive under the 37m Dome. The Project achievements can be categorized in three paths:

Structural Design Achievement: The Post Tensioned Beam and Slab structure at fourth floor level, fifth floor level and the viewing deck level is specialized engineering design. The Unsupported span of 43.21 m in PT beams resting on Column corbels and TFE Bearings over the triple height Atrium have been recorded as a World Record for Longest PT span in a building by Limca Book of Records. The GRC Dome 37m dia above the central Deck slab is in structural steel and GRC (Glass fiber Reinforced Concrete)

Green Building Features: Efficient air conditioning system, maximum use of natural light for office area, ventilated atrium planning, cavity wall design with permanent exterior finishes and BMS integrated services are efficiently functional even after 2 year of occupancy.

Record Setting: It has become a public attraction spot in the city especially on 31st December, year end, Republic Day and Maharashtra Day. The main attraction is its elegant design landscape and light elimination.

SUSTAINABILITY

Financial – The Head Office is constructed under the General Fund. All departments come under
one roof. There is saving in internal department, transport & co-ordination time.

**Cultural** - Navi Mumbai was not having any heritage or Iconic structure in the city. The building is landmark of Navi Mumbai and also an added cultural center of city.

**Ground Cover** - 80 - 90 % of parking spaces are either undercover or on open grid pavement. The open grid pavers used are 50% pervious, this helps in achieving permissible pervious-impervious ratio.

**Heat Island Effect – Roof** - Building is having exposed roof on two levels i.e. 4th floor terrace and Dome structure respectively. There are total three domes, one large dome and two small domes. For 4th floor terrace area, high reflective tiles are installed with a SRI value of 100.

For dome structure, Glass Reinforced Concrete (GRC) sheets are installed. The GRC sheets are made of concrete hence default SRI value of new gray concrete is considered for compliance with this credit. The dome is a steep sloped roof.

**Rain Water Harvesting** - Water from roof is partly collected into rain water collection tank and rest is sent to recharge pits. Surface runoff water is recharged in to ground through rain water recharge pits and overflow of recharge pits is collected to storm water drainage channels. Water from storm water drainage channel is then filtered via filtration screen before leaving the site.

**Water Efficient Landscaping** - No potable water use. The total landscaped area for NMCC Head office project is 6685 sq.mt. Water requirement for landscaping in the base case scenario is 4057402.47 gallons / annum and water requirement in the proposed design is 1335312.55 gallons/annum which is catered through recycled water. Therefore, there is a saving of 100% of potable water for irrigation by virtue of design by:

- choosing trees ground cover and shrubs
- use of drip irrigation
- use of STP for irrigation

**Water Efficiency in Air Conditioning Systems** - Water available from STP (non potable) is 2,929,389.86 gallons for HVAC applications. Hence the reduction in potable water use for HVAC achieved is: 50 %

**Sewerage Treatment Plant** - A Sewage treatment plant of 150 KLD based on MBBR technology is installed for the building. The untreated waste will be collected in RCC tank after screening.

**Water Use Reduction** - The project has managed to reduce the use of potable water for domestic and flushing use by the use of low flow fixtures and by the use of treated water.

**Outdoor Air Delivery Monitori**

If CO2 level exceeds 1000 PPM in the breathing zone or return air, an alarm will be generated in BMS.

For areas with occupant density more than 25 person/1000 Sq.ft., CO2 sensors are provided within the breathing zone at a height between 3 to 6 feet

For areas with occupant density less than 25 person/1000 Sq.ft., CO2 sensors are provided in the return air path of AHU.

**Solid Waste Management** - Storage and Collection of Recyclables

- The types of recyclables anticipated to be generated in the project are paper, plastic and metal.
- For all pantries separate bins are provided for collecting plastic and paper
- All cabins and workstations are provided with shared dustbins to collect paper waste.
- A central collection area of 835.5 Sq.ft (77.6 Sq.m.) is designated at ground level to collect the recyclables which is assessable by vehicle for convenience.

### Renewable Energy Source

- The project involves setting up of the organic waste treatment plant of 250-kg/day capacity at the specified site as suggested by NMMC, Navi Mumbai after the construction of shed and other civil infrastructure at the site.
- The digesters are fabricated based on the design details provided by TERI. Material of fabrication or construction of the digesters will be mild steel with epoxy coating or Stainless steel.

### TRANSFERABILITY

Efficient building envelope with high performance glazing, efficient lighting system, Energy Efficient Water cooled chiller, Variable Frequency drives on Air Handling units, Low-flow plumbing fixtures, Water Reuse, Rain water harvesting, Native and adaptive vegetation consuming less water. NMMC, by incorporating these green measures in its own Head office, has set an example for the future projects to be taken up by NMMC or other developing bodies. These could be termed as Self-imposed guidelines for Green development.

### LESSONS LEARNED

The work methodology adopted for construction of this building has been adopted as standard operating procedures in planning, designing and environmental suitability of all works undertaken by ULB.

This project has inculcated the habit and culture to excel and produce the international standard works in the city. Innovation in structural designs in post-tensioned beams and slabs of Dome has been recognized even in the Limca Book of records.
CASHUTEC BUILDING CENTRE

The Best Practice award under the category of “Environment Management, Energy Conservation and Green Building” was given to Cashutec Building Centre, Raichur Karnataka for their initiatives of specialized building centre for promoting fly ash utilization technologies for sustainable construction by Nirmithi Kendra / Building Centre.

SUMMARY

Cashutec Building Centre has taken the initiative of environmental protection activity like scientific disposal of waste materials for productive activity thereby avoid environmental pollution and at the same time obtain economical benefits like production of building materials from wastes. At present Cashutec is manufacturing High volume fly ash building products using fly ash and pond ash from the Raichur Thermal Power Station.

Vision of Cashutec is to develop Cashutec Building Centre as one of the premier centre for development and produce high volume fly ash precast building products using emerging technologies like Geo-polymer products where up to 90-95% of fly ash could be utilized. Similarly to develop pond ash as a partial replacement to river sand for application in the production of precast concrete products and in masonry mortar.

BACKGROUND

Cashutec is providing its fly ash utilization technology services to the Raichur district having population of more than 10 Laks. The key problem area is that it is a drought prone black cotton soil region with very low level of skilled work force with an array of activities lined up for construction by collaborating with State Government. schemes and programme.

MAIN FOCUS OF THE PRACTICE

1. Training & Awareness Activity - Organize skilled Training program for upgrading the skills of the construction work force in the updated trend construction practices like sustainable environmental friendly construction practices.


3. Construction - Demonstration of sustainable eco-friendly building materials and technologies in live construction projects like Housing, Sanitation, School buildings, Anganwadi’s, Socio economic infrastructure works, Art culture and Heritage structure etc.

4. Research & Development, Laboratory lab testing, Quality control management etc.

5. Integrated Municipal Solid Waste Management – Collection, Segregation, Composting of wet waste,

Production of Environmental Construction Products
Recycling of dry waste, Recycled aggregates from Municipal Solid Waste for the secondary application in construction of low cost and small houses and buildings.

**ESTABLISHMENT OF PRIORITIES**

Cashutec is implementing resource development programme of the Govt. like Housing, Sanitation, School & Anganwadi buildings & other social infrastructure work in rural areas which benefits state Govt. further funds channelized through Nirmithi Kendra for employment generation activities through production & construction using of local resource.

Activity area like housing are addressed for improving the shelter conditions of rural families to whom free house sites are being given.

Cashutec is playing a key role in Raichur dist. for implementation of Govt. Scheme of different Govt. department for the socio economic development of villages & providing minimum facilities like Shelter, Sanitation, Community services buildings etc. Cashutec raise funds from Govt. departments & executes work by employing unemployed & under employed work force in its decentralized production & construction activities thereby providing a sustainable livelihood to the rural community.

**PROCESS**

Initially Cashutec faced lot of problems for the acceptance of fly ash building products and were not allowed to construct houses, toilets and other infrastructure by the rural families. With a sustainable effort made through education and created awareness about the advantages of using less cost of fly ash products over the conventional building materials like bricks, wooden door and windows frames etc.

Due to continued effort today general public in rural and urban areas are accepting fly ash products in Nirmithi Kendra and there is good demand for the Cashutec products which is helping Cashutec to achieve its sustainability.

Today rural and urban households are looking at Nirmithi Kendra for the financial technical services which are not forthcoming from other departments like PWD who are not accessible to their need easily.

**RESULTS ACHIEVED**

Cost effective and eco – friendly technologies adopted by Nirmithi Kendra in the works of different departments of Government are widely accepted. Also the qualities of fly ash products of Cashutec are accepted in private sector. Consequently Nirmithi Kendra is able to cope with the demand. There is a greater confidence among the rural households on Nirmithi Kendra products and also quality of work executed.

However Kendra has created awareness among the students of engineering college Polytechnic for taking production activities using waste based building
products for which necessary technical input are being given.

More students’ community are approaching Nirmithi Kendra for academic industry technical interaction which is facilitating them to take up student project work in the emerging trend of green building construction products.

Within a span of 7 years Cashutec has achieved and made a name in the district for its quality & timely completion of different public work.

SUSTAINABILITY

Kendra has achieved its sustainability by selling building products manufactured under production activity and generates profit of more than 10%. Similarly work executed by Kendra also generates more than 5% profit. With the combined profit of production and work executed activity, Kendra has generated enough surpluses for incurring all expenditure including salaries to staff and payment of all admissible taxes.

On an average Kendra generated surplus amount of Rs. 50.00 Lakhs which is kept as a reserve fund. In fact as part of environmental protection activity Nirmithi Kendra has taken up Municipal Solid Waste Management in Raichur with its available fund surplus fund.

Sustainability of Kendra is not an issue provided efficient financial management is put in place. Staff of Kendra is being given more than 10% increase in salary as incentive which is an indication to its sustainability.
TRANSFERABILITY

The working modal adopted in the Kendra is quiet appropriate leading to efficient financial as well as work execution management. The concept adopted in the Kendra has clearly demonstrated that it can be transferable for adoption in any state. The Deputy Commissioner is playing a crucial role in monitoring the management of Kendra activities particularly having full control of financial management.

LESSON LEARNED

For the Nirmithi Kendra to become a successful venture it is necessary that district administration represented by the Deputy Commissioner should take keen & proactive role in the Kendra activities for sustainability.

Nirmithi Kendra concept in Karnataka is highly successful & it is a best practice relevant in the development of district which has potential for transferability.
KOLKATA IMPROVEMENT TRUST

The Best Practice award under the category of “Urban Design and Regional Planning, Inner City Revitalization and Conservation” was given to Kolkata Improvement Trust, West Bengal for their initiatives in Rejuvenation / Redevelopment of Rabindra Sarobar in the Kolkata City.

REJUVENATION AND REDEVELOPMENT OF RABINDRA SAROBAR

SUMMARY

Rabindra Sarobar Lake is a manmade Lake located at the posh Southern Avenue area of Kolkata. Total area of the Lake area in Kolkata is 192 acre out of which 73 acres is occupied by the Rabindra Sarobar Lake. The lake was dug in 1920’s to obtain earth for many of Kolkata’s major roads. The lake is named after Guru Rabindranath Tagore. The Ministry of Environment and Forests (MoEF) Government of India, in 2002 named it as National Lake.

Rabindra Sarobar has been neglected for some time in past and as a result; the quality of environment and ecosystem of the area has deteriorated gradually. Water pollution was on the rise, due increase in unauthorized habitation around the lake. The lake’s water was so polluted that hyacinth used to be visible all throughout the year.

Due to lack of protection at the boundary, the lake was used for cleaning, bathing, washing which worked as catalyst for degradation of water quality. Since the Lake is the biggest controller of the eco-system, poor lake water eventually affected the total balance of flora & fauna of the surrounding. The major problems as identified during various surveys were lack of boundary protection, discontinuity in walkable pathway, lack of light during night etc.

In view of this, Kolkata Improvement Trust and their consultant Bengal Urban Infrastructure Development Limited has taken up a project for comprehensive redevelopment & rejuvenation plan for the area. The change has been seen immediately; within a year of the commencement of the rejuvenation work, the park has seen new species of birds coming, death of fishes and other water species has also stopped.

BACKGROUND

Rabindra Sarobar is located in the prime area of South Kolkata. The Lake Area is surrounded by Southern Avenue, Sarat Chatterjee Avenue and
Dhakuria. Along its Southern Periphery runs Railway Track. The Lake is divided in Eastern Part & Western Part and consists of informal playgrounds, seating, pathways, informal food stalls, Toilets etc..

Rabindra Sarobar Lake is not only a beautiful natural setting within the urban space but is also an important cultural and activity hub which includes all spectrum of social life such as sports, wellness, art, entertainment.

The slow and gradual decrease in the environment led to an imbalance in the total eco-system. Regular visit of birds stopped and there were many incidents of dog bites inside the lake area.

With the environmental depletion, came deterioration in social atmosphere and darkness of the evening attracted many anti-social activities.

The common people started to move out of the lake and the cultural heart of South Kolkata was losing its place slowly.

**MOBILIZATION OF RESOURCES**

The active participation and sensitization of KIT lead the Government to sanction a fund for a comprehensive rejuvenation and redevelopment plan for the Lake. The Technical support was given by KIT and KMDA.

The master plan as well as DPR was prepared by BUIDL and the complete project was funded by Urban Development Department of Govt. of West Bengal (GoWB). A huge moral support has been received by the locals and regular users.

Two groups of the users; namely PUBLIC (People United for Better Living in Calcutta) & RSMC (Rabindra Sarobar Monitoring Committee) has been extremely helpful.

**PROCESS**

The areas have strong emotional connection with most of the local population. Each day the park gets flanked by the morning walkers, joggers, laughing club members and other aged people. Throughout the day, the lake area remains crowded by people of all social and cultural background. This phenomenon was the prime guideline in the implementation process and the KIT officials involved the local users in all respect.

The Master plan has been prepared keeping in mind the feelings of the people and their needs. However preservation and improvement of the environment and the natural setting was given most importance.
The following process has been followed:

1. Preparation of Conceptual Master Plan
2. Stakeholders Meeting
3. Preparation of Final Master Plan
4. Preparation of Draft DPR
5. Preparation of Final DPR
6. Stakeholders Meeting
7. Obtain grant from State Govt.
8. Implementation

RESULTS ACHIEVED

The main components conceptualized for the rejuvenation are boundary fencing of the total lake area and complete Lake Bank promenade with sufficient light. These two features have completely changed the whole get up of the surrounding.

The promenade has been created by relaying attractive looking paver blocks and placing heavy bollards with light along the bank. The bank has now been turned into a jogger’s paradise. The high fencing has stopped unnecessary trespassing and theft of assets.

The blank wall in front of the main entrance has been converted into a graffiti wall with beautiful painting. The Existing steam roller of last century which was degrading slowly is now repainted and the area around it has been beautified.

The soil of the tree roots which were eroding with rainwater are now guarded with tree beds and are converted into beautiful seating areas. The pathways are relaid with colorful tiles and the whole appearance of the lake area is now improved.

The lights of the lake bank bollards are so placed that no light can fall on the water and disturb the fishes. The wattage is also kept below the standards in which the birds get disturbed. This is a unique method of improving human environment without hampering the other animals.

The result has been visible. The activities which moved away from Rabindra Sarobar have returned and the social, cultural, academic activities are back.

SUSTAINABILITY

The existing infrastructure has been remodeled and rejuvenated to increase its effectiveness and efficiency. A 20 Cr rupees project has given this 200 Acres of area a complete new look.

The cultural improvement has brought more people to lake. The development program has also brought back many species and birds and animals which were not visible in recent past.

TRANSFERABILITY

Rabindra Sarobar is a unique lake which acts as lung of South Kolkata. Rabindra Sarobar is the biggest cultural interaction zone of Kolkata and this is something which needs to be replicated all across the country. The model Rabindra Sarobar has created is exactly what urban green should look like.

Kolkata Improvement Trust has taken another similar project at Subhas Sarobar that has gained public interest even in the conceptualization stage. Rajpur Sonarpur Municipality has also initiated similar exercise around their lakes.
LESSONS LEARNED

The project has been a lifetime learning for each and every person involved in the project. The initial stage has been full of tussle and a lot of time was spent to convince the local activists that all the development was not about cutting trees. Actual development is something that creates equitable space for man and nature. Not a single tree has been cut or transplanted during the total project implementation.

Even the actual green cover has not been reduced by a single square meter. It was learned that convincing people and guiding them towards a development of the project is very crucial for its success.

Kolkata Improvement Trust has made a milestone achievement of bringing together all the users under one umbrella.
Directorate of Urban Development & Poverty Alleviation, Government of Mizoram and Young Mizo Association (YMA)

The Best Practice award under the category of "Sanitation" was given jointly to Directorate of Urban Development & Poverty Alleviation, Govt. of Mizoram and Young Mizo Association (YMA) for their initiatives in Sanitation through public participation in Mizoram.

SANITATION THROUGH PUBLIC PARTICIPATION IN MIZORAM

Directorate of Urban Development & Poverty Alleviation, Government of Mizoram and Young Mizo Association (YMA) were awarded jointly in the category of ‘Sanitation’ for their initiatives in Sanitation through public participation in Mizoram.

Young Mizo Association (YMA)

The Young Mizo Association (YMA) is the largest and most comprehensive non-profit, secular and non-governmental organization in Mizoram. Since YMA is the main agency for the development of Mizo society other than government, it takes all steps for development of the area and works for the improvement of sanitation condition in villages along with the cooperation of village authority and government agencies.

Most rural areas use pit latrine and some practices open defecation before YMA took initiatives in cleanliness. In order to improve the sanitation condition, the Government extended for the cooperation of YMA and in most of the State Level Committees of the Government, YMA was included as the member. The YMA was an association where most of the Mizo youths (men and women) were enrolled; it plays an important role in the development of the society in every field, particularly in sanitation and cleanliness of the local areas.

ESTABLISHMENT OF PRIORITIES

The Young Mizo Association used the following strategies to achieve the targets:

i. YMA organizes public awareness campaign in every branch in every locality. The leaders visit schools and institutions within their areas to deliver awareness speech throughout the year. Social works on cleanliness is one of the prominent and regular activities of the association and is frequently organized after a regular interval.

ii. YMA in collaboration with the government
agencies/departments and local authority, organize public sanitation campaign in which free medical clinics are organized.

iii. YMA branches maintain and preserve the village water shed/source by cleaning and repairing, as a regular activity. They also plant trees and reserve the forest in order to have abundant water sources.

iv. They also cooperate with the government agencies/departments and local authority in order to improve the condition of the sanitation.

MOBILIZATION OF RESOURCES

Financial Resources - Since YMA is an NGO and voluntary organization, it has no financial sources for sanitation. Every member gives ₹ 5 for membership enrolment every year, and no regular financial sources are acquired apart from membership fee. However, 2% of each membership fee (2% of Rs. 5/-) is spent for the purpose of sanitation and cleanliness annually. Whenever a new programme such as Endowment, Financial aid to homes, orphanages, relief etc. was initiated earlier, collection was done from its members. Since it is a voluntary organization and every activity has been done voluntarily. YMA has also never asked for price or any kind of commendation. If it has received assistances from government or other agencies, it is being distributed to the branches; and sometimes used for as a prize for cleanliness competition among the branches.

Human Resources - YMA is rich in human resources and there are 4, 04,535 members in YMA at present which constitutes 2, 47,711 men and 1, 56,824 women.

PROCESS

A. KEY HURDLES

i. There was lack of awareness and knowledge on sanitation and cleanliness among the citizens.

ii. The major hurdle was to overcome scarcity of water and to improve the drainage system.

iii. The century long bad habit of throwing waste in and around the house, street etc. was slowly eradicated day by day.

iv. The dustbins were put in every street, house, public places and even in the remotest villages.

To overcome these obstacles, the Young Mizo Association voluntarily worked and the initiative was designed in such a way that no special allocation was required for improvement for public sanitation.

B. PARTICIPATION OF COMMUNITIES

i. The primary stake holders were the community members who were sensitized and mobilized through extensive participatory method of mass participation in cleanliness drive and awareness programme.

ii. Institution: Schools and other institution also actively participate in the process. YMA leaders visited number of schools and other institutions for awareness campaigns.

iii. Since the membership of the YMA is composed of both men and women, it was ensured that women actively participated in the programme.

iv. NGO – other non-governmental organization (NGO) such as MHIP, MUP, and its partner in southern Mizoram i.e. MTP and CYLA also participated.

RESULT ACHIEVED

a) Mass communities were mobilized to have proper sanitation awareness and knowledge.

b) Separate committee/cells are set up in every YMA branches throughout the state and public awareness on sanitation is made through various local YMA weekly newspapers.

c) Various numbers of hoarding displaying awareness on sanitation and cleanliness were set up along the streets of Aizwal city.

d) A change was seen in the student’s community, they stated putting waste in their bags and
dustbins rather than throwing it on throwing it elsewhere.

e) Not only the YMA, the other NGOs such as – MHIP (a women organization), MUP (an old age association), MZP (student’s organization) etc. had also put cleanliness as one of their activities.

f) The YMA received Memento for outstanding performance in cleanliness and sanitation under Swatchh Bharat Abhiyan (urban) along with its NGOs partner – MTP and CYLA.

TRANSFERABILITY

The task of public sanitation and cleanliness undertaken by YMA is of concern for people, nation and country. It can be replicated by every people and every nation in every country. In Mizoram, public sanitation and cleanliness work is done by people, NGOs – MHIP, MUP, students organization etc. Government and other agencies also give support to those agencies by means of financial assistance for awareness, refreshment, kits etc.

SUSTAINABILITY

The public sanitation and cleanliness requires active participation and can be done manually even by individual. So there is no question of financial sustainability. The public water – shed and water sources requires more planting of trees and preservation of forest which ensures environmental sustainability.

LESSONS LEARNED

Public Sanitation and cleanliness is a community based activity which involve a mass participation. If the general public is involved in greater number, the success rate will be much higher. In order to eradicate the old tradition of disposing waste and illiteracy in sanitation and public health, good cooperation with the general public and authority, agency etc. was necessary.

Public awareness campaign is strongly recommended for improvement in public sanitation and cleanliness, as it requires lesser amount of money. It can be done manually even by unskilled person. Competition among the community in regards to cleanliness is one effective way of improvement in sanitation and cleanliness. The government sanctions amount for prizes of competition for the cleanest village/locality in order to motivate others. Every year, the government organizes such kind
of competition on the occasion of Cleanliness Week (Faina Hapta) in the month of October. It was learnt that well – coordination and cooperation with NGO’s and Government agencies is one of the effective measures for improvement of public sanitation among the citizens of Mizoram.
JAMNAGAR MUNICIPAL CORPORATION

The Best Practice award under the category of “Sanitation” and “Urban Design and Regional Planning, Inner City Revitalization and Conservation” was given to Jamnagar Municipal Corporation, Gujarat for their initiatives in (a) Individual Toilets under NGSY, (b) Beautification and Revitalization of Ramnal Lake and (c) Conservation, Restoration, Consolidation & Rehabilitation of Khambhaliya Gate in the Jamnagar City.

A. INDIVIDUAL TOILETS UNDER NGSY – UNDER MAHATAMA GANDHI SWACHCHTA MISSION (MGSM)

SUMMARY

Jamnagar is a coastal city located in the Saurashtra region of Western Gujarat with a population of 6 Lakh as per Census 2011, 88.4% households in the city have individual toilets. The city currently has a limited network of underground drainage (UGD) and is largely dependent on on-site sanitation systems for disposal of wastewater. The Jamnagar Municipal Corporation (JMC) is responsible for providing basic services including water supply, sanitation and solid waste management. There are a total of 67 slum pockets in Jamnagar with a total of 28,845 households. The JMC has been facilitating access to toilets (individual and community) in slums under the MGSM.

As per Census 2011, 6% households in the city resorted to open defecation in 2010. The JMC has been providing individual toilets in the city for the last five years under the Nirmal Gujarat Shauchalaya Yojana (now subsumed under the MGSM).

However in the absence of underground drainage, many households had connected these toilets to khaalkunvaas or single pits that were constructed without any lining and primary treatment capacities. The rampant use of khaalkunvaas or single pits in the city posed two major threats:

- ground water contamination and environmental degradation and
- limited use of these toilets.

Individual toilets were constructed by empanelled NGO’s and contractors as per set dimensions and specifications of the State Government.

ESTABLISHMENT OF PRIORITIES

Demand survey was carried out by 35 different NGO’s and contractors all over the city including remote and slum areas to identify beneficiaries who did not have toilet facility. After that, ward wise list of beneficiaries was prepared & work was allotted to the NGOs / Contractors. There were 20 technical supervisor appointed for supervision of construction work of toilets and for monitoring of the same 1 Deputy Engineer for each 2 wards were appointed.

All officers in the monitoring cell remained connected through a WhatsApp group and these officers regularly monitored the progress of work in each of the 16 wards. A review meeting is to be held once every week and is presided over by the Commissioner.

MOBILIZATION OF RESOURCES

NGO/ Contractor Led Toilet Construction

Under the current scheme, JMC provides the contractor an amount of Rs. 14,000 per individual toilet, which includes a superstructure with a fitted pan, a sub-structure comprising a septic tank with effluent disposal, and a water tank to store water.
JMC is constructing new toilets and septic tank units using light-weight, pre-fabricated autoclaved aerated concrete (AAC) blocks. Use of this material expedites the construction time and provides good finishing.

Formation of Special Monitoring Cell

A special monitoring cell has been established with 10 Deputy Engineers and additional 20 technical officers. The Ward engineers also participate in site inspections and resolve matters on a case-to-case basis.

PROCESS

JMC facilitated the construction of individual toilets as per the guidelines of the MGSM. The Municipal Council carried out an awareness campaign to generate demand for new toilets and engaged with Sakhimandals (women’s self-help groups) in slums and trained them to disseminate information about the MGSM scheme.

Door-to-door campaigns were conducted. JMC joined hands with religious institutions and appealed to the communities to construct toilets and use them. The Government of India provides a financial incentive of Rs. 4,000 per household as per the guidelines of Swachh Bharat Mission (SBM). The Government of Gujarat provides an additional incentive of Rs.8,000 under the MGSM.

In addition, the JMC provides an incentive of Rs. 2,000 per household. Hence, JMC provides a total incentive of Rs. 14,000 which covers the whole cost of the basic toilet module along with its sub-structure.

RESULTS ACHIEVED

In the last two years, the JMC has facilitated construction of 13,594 toilets, more than the number of households without toilets as per Census 2011. Earlier, open defecation was observed at 62 places in the city but with the recent initiatives 44 of these have been permanently cleared; the remaining 18 are currently being monitored. 13,500 plus individual toilets have been constructed in the last two years. The state government has felicitated JMC for 100% coverage of individual toilet facilities and awarded a prize amount of Rs 5 lakh.

JMC engaging sakhi mandals or women’s self-help groups in several slums. These sakhi mandals were trained to disseminate information about the toilet scheme under MGSM.
To achieve the objective of making an open-defecation free Jamnagar, JMC has outlined the following next steps:

- Continuing targeted awareness campaigns for generating demand for toilets and promoting their use.
- Strict enforcement and levying fines for open defecation
- Introducing cleaner technology and zero-waste toilets such as bio-gas technology and eco-toilets.

JMC is preparing a new project to use biogas technology to treat the sludge generated from the existing and new community and public toilet blocks.

**TRANSFERABILITY**

In Gujarat, the State Government provides a significant financial subsidy for construction of individual toilets; this might not be true to other states. The urban local bodies can provide incentive grants from their own budgets and can facilitate small loans to encourage users to construct individual toilets in their homes.

![Ward wise status of construction of toilets](image)

<table>
<thead>
<tr>
<th>Ward Number</th>
<th>Toilets Constructed</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>1852</td>
</tr>
<tr>
<td>02</td>
<td>1328</td>
</tr>
<tr>
<td>03</td>
<td>5</td>
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</tr>
<tr>
<td>09</td>
<td>1099</td>
</tr>
<tr>
<td>10</td>
<td>634</td>
</tr>
<tr>
<td>Total</td>
<td>13594</td>
</tr>
</tbody>
</table>

JMC aspires to be the first city in Gujarat to declare itself ‘open defecation free’.

![JMC aspires to be the first city in Gujarat to declare itself ‘open defecation free’](image)
SUMMARY

The vision behind this project is to restore and stimulate the “breathing spaces” of the inhabitants of the city while “remaking a home” for the migratory birds and enhancing the city’s identity by reactivation its “heritage structure.” The principal objective of the project is to improve the pedestrian movement around the lake and to add various supporting activities which will enhance the value of the existing historical structures, also to create natural environment for the migratory birds.

The total cost of the project is Rs. 30 Crore and covers development of the periphery of the lake of approximately 2.8 kms. The project covers an area of 48,000 sq.m including 30,000 sq.m of landscaping and 18,000 sq.m of parking. The total build up area is 1,700 sq.m and the grant for the project is approved under the Swarnim Jayanti Mukhya Mantri Saheri Vikas Yojana.

The role and scope of the different agencies involved in the project is as follows:

<table>
<thead>
<tr>
<th>Agency Name</th>
<th>Role and Responsibility</th>
<th>Contract Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jamnagar Municipal Corporation</td>
<td>Owner Providing Financial aid and supervision the execution of the project</td>
<td></td>
</tr>
<tr>
<td>Ecourb Consultants, Ahmedabad and Joshi Associates, Jamnagar</td>
<td>Designer and Planners Designing and planning of the project along with provided project management consultancy</td>
<td></td>
</tr>
<tr>
<td>Shanti Construction, Jamnagar</td>
<td>Contractor, Execution of the Civil Contract of the project which includes MEP, landscaping and civil works</td>
<td>32.05 Crore INR</td>
</tr>
<tr>
<td>Akhar Shilp, Jamnagar</td>
<td>Contractor, Execution of the Restoration Contract which includes restoration of city museum and 6 jharokhas and construction of more 28 jharokhas</td>
<td>1.67 Crore INR</td>
</tr>
<tr>
<td>Premier World Technology, Baroda</td>
<td>Contractor, Execution of the Musical Fountain contract</td>
<td>5.29 Crore INR</td>
</tr>
<tr>
<td>P.C. Snehal Construction Company, Ahmedabad</td>
<td>Contractor, Execution of the Jogging track</td>
<td>4.02 Crore INR</td>
</tr>
</tbody>
</table>

BACKGROUND

Jamnagar is situated on the confluence of the rivers Rangmati and Nagmati. It is located at 22.28°N and 70.04°E with an average elevation of 20 M above mean sea level. Jamnagar attracts more than 150 species of birds during the winter seasons and out of this, around 70 species are witnessed at the Ranmal Lake which spreads around an area of 0.55 sq. mts. This has
made it a favorite tourist destination. However due to steep rise in population, heavy traffic movement and increasing pollution levels are witnessed. This has an alarming impact on the decline seen in the population of the migratory birds seen here in last few years. It has also led to the deterioration of the heritage structures like Lakotha Fort, Khambaliya Gate, Bhujio Kotho which stand around the lake area.

**PROCESS**

The first and foremost priority of the project was to demarcate the pedestrian and vehicular traffic areas. Temporary barricading was also done to divert the traffic on the alternate routes and to study the effect of permanently converting vehicular roads into pedestrian zones. Once the study was completed and found to be workable, construction of the compound wall of the lake which runs around the proposed peripheral jogging track was started. Construction of 4 entry gates out of 9, were started after which parallel restoration works of jharokhas started. Earlier there were 6 existing jharokhas and 28 new similar kinds of jharokhas were proposed. Once the compound wall and entry gates were constructed, civil works of administration building, toilets food stalls and Amphitheatre, parking areas, landscaping and pathways was started.

The master plan was prepared on Heritage Theme in first phase. The second and third phase was planned on Nature and Recreation Theme respectively. The contracts were given for Civil Work (including plumbing, electrical, landscaping work), Fountain work, Jogging track work and restoration of Jharokas to bring out the best quality work from the best contractors in the respective fields. Coordination meeting were held every week to keep a check on the monitoring of the project.

**PROBLEM FACED**

Project faced many challenges from various organizations. As the lake is located in the middle of the city and has the linkage roads to various parts, many people came forward to challenge the project. However, an attempt was made to invite the suggestions of the citizens and stake holders of the city through newspaper by the then Mayor, Mr Dinesh Patel.

**RESULTS ACHIEVED**

The lake edge today is a cleaner and hygienic place. Lot of public movement is seen around the lake edge. A wide range of age group is seen carrying out different activities like jogging, exercising, resting, chatting, reading newspapers/ book, playing, singing bhajans/ kirtans near the hanuman temple which is now a part of the lake periphery, etc. The area also attracts more birds than ever seen before. An increases activity of
the migratory birds is noticed. The area has become more responsive towards children and physically challenged people as the vehicular zone is converted into pedestrian area.

Traffic congestion is reduced to a great extent as the hawkers selling food and small articles around the lake edge have now shifted to food plaza area build around the jogging track. With the restoration works for the jharokas, the lake edge today enhances the beauty of the historic Lakota fort which stands magnificently in the centre of the lake.

SUSTAINABILITY

Financial- The cost of the project will be recovered over a period of the time through different activities that have been provided at the lake precinct which are: ticket for musical fountain show, battery operated car rides, city museum, fees for parking facility and lease amount from the food stalls.

Social- Lake is open to people from all ages groups irrespective of cast, creed and sex. Ramps are provided wherever there are level changes to make it inclusive for physically challenged people. Benches/ rest areas are provided at short intervals for the veterans. Play areas are provided for the children and jogging tracks are provided for promoting healthy lifestyle amongst the city dwellers.

Cultural- The Lake showcases importance of the heritage of the city and creates an awareness of its conservation amongst the youth of the city.

Environmental- The landscaping around the lake has helped to a large extent in preserving the ecological balance of the city. The cleaning of the lake area has helped in creating a healthy environment for the migratory birds.

LESSONS LEARNED

The major challenge faced during the project was the coordination between the different contractors as the scope of their work was quite different from each other. To overcome this challenge faced between a coordination meeting held, it was realized during the execution that a detailed scope, roles and responsibilities of each of the contractor must be outlined before the award of the work and must be strictly adhered too.

An ice breaking session followed by daily meeting to clear any misunderstandings must be conducted to ensure smooth function of the work.

Training to the site engineering regarding project monitoring tools/ softwares like MS Project, Primavera must be given before the execution of the project on site.
C. CONSERVATION, RESTORATION, CONSOLIDATION AND REHABILITATION OF KHAMBAHLIYA GATE

SUMMARY

Kambhaliya Gate is a 250 years old heritage and a protected monument. Due to negligence the gate was in dilapidated condition. It was also affected by earthquake in 2001 and JMC considered its moral responsibility to restore and maintain this. The proposal prepared with transformation of upper storey for heritage gallery and ground storey for pedestrian passages & 2 walkway galleries.

BACKGROUND

To restore protected monuments, JMC signed MoU with State Archeology Department Gujarat for its supervisory role and guidance. Ranmal Lake precinct and the monuments surrounding it i.e. Lakhota Kotho, Bhujio Kotho and Kambhaliya Gate are providing city heritage characteristic a unique urban space merging with nature, water and built heritage in sole destination.

KEY DATES

<table>
<thead>
<tr>
<th>Dates</th>
<th>Significance/ Achievements</th>
</tr>
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<tbody>
<tr>
<td>20-7-2012</td>
<td>Approval of DPR by the general Boards committee</td>
</tr>
<tr>
<td>23-1-2013</td>
<td>Work started for restoration work of aquarium</td>
</tr>
<tr>
<td>05-3-2014</td>
<td>Work order given for jogging track</td>
</tr>
</tbody>
</table>

MOBILIZATION

JMC spared an attractive amount for rejuvenate the heritage monuments from its regular yearly budget. The project was conceptualized with the technical support and guidance of the Sate Archaeological department of Gujarat and after obtaining approval from state, JMC funded the project from SJMMSVY grant. JMC appointed Consultant specialized in heritage conservation programming & contractors who possesses experience in the field of conservation.

PROCESS

Overall methodology followed for executing the project is as follows.

Survey & data collection
Analysis & monitoring the causes
Preparation of conceptual development report
Statutory approvals
Preparation of tender documents
Preparation of execution drawings
Execution management
The appointed consultant/Architecture firm did feasibility studies and other data collection to prepare Detailed Project Report in liaison with State Archaeological department. After obtaining necessary approvals from the State Archaeological department JMC signed the MoU with the department. Based on the DPR, the Consultant firm prepared draft tender papers (DTP) for appointment of experienced and capable contractor agencies.

RESULT ACHIEVED

➢ Awareness among the citizens for the heritage monument was generated.
➢ Traditional lime and construction process revived that encouraged traditional craftsmanship in the region.
➢ It was learnt that heritage legacy can bridge the gap to the next generations.
➢ The project set an example for spreading awareness among the citizens.

SUSTAINABILITY

Rehabilitation of a protected monument into a modern heritage galleries became a self-sustain model that lead reimbursement by collecting nominal charges from the visitors that can be utilized in to the maintenance & management of the monument.

TRANSFERABILITY

The project team has displayed the whole process of execution and its overall methodology in one of the gallery of the monument, so that others may encourage & easily replicate the model.
LESSON LEARNED

During the execution many challenges were faced such as working in the dense neighborhood & beside the heavy traffic movement where many complaints were passed across by the stakeholders. De-vegetation over the monument was challenging itself.

Hence the JMC had decided to appoint a project management consultant to monitor, supervise & execute the project so that every minor detail would be taken care of with the utmost precision & professionalism. Moreover the project was unique in itself & much on aspiration based.
BANGLORE METROPOLITAN TRANSPORT CORPORATION LIMITED

The Best Practice award under the category of “Urban Transportation” was given to Bangalore Metropolitan Transport Corporation Ltd., Karnataka for their initiatives in Parking Solutions and GPS based Initiatives in Local Transport in the Bengaluru City.

A. GPS BASED INITIATIVES FOR TRANSPORT IMPROVEMENT

SUMMARY

Intelligent Transport System for BMTC includes Procurement and implementation of Intelligent Transport Solution (ITS) comprising 6500 GPS based Vehicle Tracking units, Data Centre for 6500 buses entailing Design, Development, Testing, Certification, Installation, Commissioning, Training, Operations, Maintenance and Management for a period of five Years by the vendor.

BACKGROUND

GPS based Vehicle Tracking System aims at monitoring the operation and there by improve operational efficiency by increasing crew productivity, vehicle utilization and ensuring timely operation. Also, Vehicle Tracking System aims at providing real time information to commuters there by reducing uncertainty and anxiety.

MOBILIZATION OF RESOURCES

As the Vehicle Tracking Units were supposed to be installed in all the 6500 buses, installation was outsourced wherein teams were formed to work in different shifts depending on the availability of buses so as to install the VTUs in all the buses of BMTC to complete the work in stipulated time period.

PROCESS

Acceptance by BMTC crew was the main hurdle that was faced for installation of VTUs in buses. As it was felt that it may cause difficulty in performing their duty, there were a lot of tampering issues wherein crew used to disconnect the devices.

This was addressed by creating awareness among the crew like how it works as an advantage to them in times of accidents/ unfavorable situation. Currently the project is under implementation and is expected to be completed by 12th January 2016.
RESULTS ACHIEVED

The GPS enabled Vehicle Tracking Unit will use wireless communication module (based on GPRS/GSM), to provide vehicle tracking reliably. The application enables control centre staff to monitor the operation, which shall be achieved by providing graphical tools for visualization. This enables BMTC to analyze information and online data in a multi-dimensional manner. The application will have capability of multi-screen based tracking system, so as to enable tracking staff to quickly analyze activities and have a better insight into operational data of all activities within the system.

The GPS based Automatic Vehicle Locator is helpful in:

➢ Tracking the real time of buses and monitoring them,
➢ Collection of operational data and MIS reports.
➢ Two way voice communication between the bus and the control centre.
➢ Providing Real time Passenger Information through different channels: LED based displays at major bus stands, SMS, Mobile App, Bus stops, IVRS facility and internet.
➢ PIS LED display screens are installed at 10 major bus stands these LED displays provides the bus arrival information like Bus No., Route, Destination and ETA in both Kannada and English.
➢ Establishing Control and Command Centre.

SUSTAINABILITY

Financial: Cost recovery is in the form of increased productivity and decreased operational cost due to increased operational efficiency.

Social and Economic: Installation of Vehicle Tracking unit helps to Monitor driving habits of drivers to Improve driving profiles in order to reduce accidents. This would also help to track vehicle at any point of time and contributing towards women safety.

Environmental: Increased reliability and punctuality of bus operations enhances the customer confidence and hence modal shift from personnel mode of transport to public transport thus reducing road congestion and thereby pollution.

TRANSFERABILITY

The concept of Vehicle Tracking System can be replicated in other STUs so as to regulate, track and monitor bus operations.

LESSONS LEARNED

Sub-contracting should be avoided for major modules of ITS, SI should have ample technical and prior experience in implementing similar projects.
SUMMARY

With the aim of popularizing Public Transport, BMTC devised the idea of Traffic & Transit Management Centres (TTMCs) i.e. Transport hubs that would provide multiple public amenities and services under one roof along with Public Transport. In the first phase 10 TTMCs out of a total plan of 25 have been constructed in around the city and all of them are now operational. TTMCs are conceived as state of art comprise of Bus Terminals, Park and Ride facility with other facilities.

The main vision behind TTMCs is to be the world’s best Transport Services provider for Bangalore Metropolitan Area.

BACKGROUND

The Traffic and Transit Management Centers Under JnNURM scheme aims at executing infrastructure projects in major cities and metros. BMTC is the only public transport corp. to ferry more than 5.02 million commuters everyday within the city of Bangalore and comprises a fleet of over 6600 buses covering an area encompassing a radius of 40.4 km from city center in a day. This project will help people who were facing difficulties in bus transit, bus stands which were lagging with basic amenities.

MOBILIZATION OF RESOURCES

The 10 TTMCs have been developed at a total cost of Rs 480 crore. The agencies were selected through transparent way and were constantly supervised in implementing the projects on time. This helped in speedy completion of the projects well in time.

PROCESS

The TTMC’s under JnNURM project are multi model hubs. Persons having two and four wheelers can park their vehicles and travel by public transport, there is a provision for the other modes of public transport like taxies, auto rickshaws and buses for outside city services to railway stations and airport.

Improvement in bus bays, lighting, waiting lounge, seating, queue system, control accessibility, signage, passenger information kiosks, entertainment and commercial, park and ride facilities are required services in public transport hubs. These services will improve ridership.

All 10 TTMC’s were operational by April 2011. These TTMC’s are located in the prime areas of Bangalore city such as Jayanagar, Shanthinagar, Vijayanagar, Yeshwanthpur, Kormangala, ITPL, Bannerghatta, Domluru, Keneri and Banashankari.

RESULTS ACHIEVED

Public Transport Corporations get revenue from the sale of tickets and passenger passes. Commercial revenue, is realized through letting out the building space available with the centres. Traffic transit management centers have site area of 1,43,248 sq. mt. and parking for 2800 two wheelers and 3715 four wheelers. The total expected revenue from these building is more than Rs. 48 crore per annum.
**SUSTAINABILITY**

**Financial:** The TTMC’s have emerged as important transport hubs to increase the ridership for the BMTC and are perennial source of revenue. The park-and-ride encouraged the people to use the public transport.

**Social, Cultural and Economic:** These centres became the meeting centres for people of different cultures. The easy accessibility of public transport helped people to access modern facilities. The multilevel park & ride facilities are much appreciated by the users.

**Environmental:** Environmental conservation is achieved by reducing use of personal vehicle. These buildings are constructed with the plan of using natural lighting. Rain water harvesting is made mandatory in constructing these buildings. The bus maintenance depots are established in the basement area to avoid dead kilometers and save energy.

**TRANSFERABILITY**

This system can be integrated with other modes of transportation systems like metro, mono and express rail corridors. It can also be replicated in other metro cities.
OVERALL CITY DEVELOPMENT INITIATIVES
BY SURAT MUNICIPAL CORPORATION

Surat Municipal Corporation, Gujarat was recommended for a special award “Overall City Development” by the Committee for their various initiatives in the field of Affordable Housing, 24 X & Water Supply, Sanitation, Energy Conservation, Disaster Preparedness and Rain Water Harvesting in the Surat City.

A. AFFORDABLE HOUSING, SLUM AND SETTLEMENT UPGRADING
AND IMPROVEMENT, SERVICES FOR THE POOR

SUMMARY

Due to industrial development of Surat city migration of labour from nearby states has increased informal settlements. This has attracted the focus of local body to provide affordable houses to slum dwellers because they are not able to purchase houses from open market. During the actual Socio-Economic survey, total 431 slums were surveyed which includes both existing, newly identified, Relocated, Rehabilitate slums. Out of which 339 slums were existed identified and located on site (Till 30th June 2014), 55 Slums Demolished/Shifted, 16 Slums Developed under PPP and 21 slums having less than 20 households. At present 332 slum exists (30th Nov. 2015)

MOBILIZATION OF RESOURCES

SMC has decided to eradicate slums by providing them affordable houses with Physical & Social Infrastructure. State and Central Government made budgetary provision to assist local body in funding. Works being carried out by funding assistance from State as well as Central Government is being monitored by Third Party Inspection Agency engaged by local authority.

RESULTS ACHIEVED

Shifting of slum dwellers from slums to affordable houses with basic infrastructure facility has improved their quality of life and also it has resulted into feeling of self esteemed. The Social status with their habits is also improved by upliftment in their living environment.
B. **24X7 WATER SUPPLY IN NEW NORTH ZONE AREA OF SURAT CITY AND ESTABLISHING THE BENEFITS OF 24X7 WATER SUPPLY**

Surat Municipal Corporation has started implementing 24x7 Water Supply Scheme with 100% consumer metering in the extended area of Surat City. The implementation of the scheme has resulted in water loss well within the Service Level Benchmark norms. Having realized the benefits of implementation of 24 x 7 water supply scheme, same is being replicated in other area of Surat City.

Total area of Surat city is 326 sq. km, out of the total area, old city area of 112 sq.km. which is having piped water supply scheme with intermittent water supply duration. With city limit extension, area merged in city limit was having age old Tube well / Bore well based water supply scheme with in adequate quantity and quality of water. Out of total newly merged area, this initiative highlights the efforts made by Surat Municipal Corporation toward the implementation of 24 x 7 water supply scheme.

![Map of Surat City: North Zone](image)

### MOBILIZATION OF RESOURCES

Major Infrastructure components like Water Treatment Plants, Distribution Stations, UGSRs, ESRs, Transmission and Distribution Network etc. under 24 x 7 Water Supply Scheme is implemented in all manners in year 2013. Except Intake well, all other components are constructed in consideration to the water demand of year 2026.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Components</th>
<th>Capacity / Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Source of Water Supply</td>
<td>Surface water of River Tapti</td>
</tr>
<tr>
<td>2.</td>
<td>Intake well</td>
<td>200 MLD (executed in consideration to the water demand of year 2041)</td>
</tr>
<tr>
<td>3.</td>
<td>Water Treatment Plant</td>
<td>90 MLD + 32 Million Liters per Day (MLD) (Two WTPs) – Executed in consider to the water demand of year 2026</td>
</tr>
<tr>
<td>4.</td>
<td>Water Distribution Stations</td>
<td>4 (Four) Storage – 32.6 ML</td>
</tr>
<tr>
<td>5.</td>
<td>Elevated Service Reservoirs (ESRs)</td>
<td>15 (Fifteen) Storage Capacity – 29.1 ML</td>
</tr>
<tr>
<td>6.</td>
<td>Length of Distribution Network</td>
<td>210 Km.</td>
</tr>
<tr>
<td>7.</td>
<td>Consumer connections</td>
<td>More than 6000</td>
</tr>
<tr>
<td>8.</td>
<td>Major consumers</td>
<td>Residential with 0.5” size connections</td>
</tr>
</tbody>
</table>
### RESULTS ACHIEVED

<table>
<thead>
<tr>
<th>S.N.</th>
<th>PARAMETERS</th>
<th>PERFORMANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Total Water Supply</td>
<td>20 Million Liters per Day</td>
</tr>
<tr>
<td>2.</td>
<td>Total House hold connections covered under 24 x 7 water supply scheme as on date</td>
<td>4790</td>
</tr>
<tr>
<td>3.</td>
<td>Total numbers of domestic consumer meters installed till date</td>
<td>4790</td>
</tr>
<tr>
<td>4.</td>
<td>Mode of Scheme operation</td>
<td>Through deployment of Private Operator for 24 x 7 water supply scheme operation and maintenance for 5 years</td>
</tr>
<tr>
<td>5.</td>
<td>Role of Private Operator under scheme</td>
<td>• Overall operation and maintenance of scheme, Water Loss measurement and reduction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Consumer connection, leakage repairing and Metering, meter reading, billing and collection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Water quality monitoring and control from source to consumer in adherence to IS 10500-2012</td>
</tr>
<tr>
<td>6.</td>
<td>Average water loss observed from source to consumer</td>
<td>14% (Average)</td>
</tr>
<tr>
<td>7.</td>
<td>Per month O&amp;M expenditure (Rs./Month) FY 2014-15</td>
<td>Rs.14.26 Lac / Month</td>
</tr>
<tr>
<td>8.</td>
<td>Revenue Collection (Rs./Month) FY 2014-15</td>
<td>Rs.15.70 Lac / month</td>
</tr>
</tbody>
</table>

**Change in Practices after 24X7 Water Supply by SMC:** Time saving is there as they do not have to waste time in standing in a queue for water filling.
C. GENERATION OF CLEAN ELECTRICITY THROUGH SEWAGE GAS

Rapid industrialization has been largely responsible for excessive combustion of available fossil fuels and this has led to massive pollution and depletion of natural sources. Added to this, the growing concern for environmental degradation due to greenhouse gas emissions, ozone-depletion and other man made phenomenon have shifted the focus and given a new thrust towards thinking of non-conventional energy sources such as wind, solar (photo voltaic), hydro, biomass / baggage based co-generation and other domestic and industrial wastes. Surat Municipal Corporation has established and successfully running Sewage gas based power plants across the city.

MOBILIZATION OF RESOURCES

SMC initiated a proposal of generating energy by using sewage gas from the existing digesters at the Anjana Sewage Treatment Plant, Surat. Ministry of Non-Conventional Energy Sources (MNES) has been promoting and financially supporting Demonstration Projects involving recovery of energy from wastes. MNES and SMC agreed to setting up Sewage based gas power generation projects at Anjana where 50% cost is being borne by MNES.

RESULTS ACHIEVED

The present generation of the electricity from this plant is about 3000 to 4000 units/day, which is consumed to run Anjana Sewage Treatment Plant itself.

To oversee the activity of project, SMC had formed the Project Implementation Committee constituted from leading consultants from academia and industry.

Sewage base power plant at Anjana

<table>
<thead>
<tr>
<th>Total Cost of project</th>
<th>Rs. 286.53 lakhs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant from MNES / GEF</td>
<td>Rs. 130.23 lakhs</td>
</tr>
<tr>
<td>Total Fund of SMC</td>
<td>Rs. 156.30 lakhs</td>
</tr>
<tr>
<td>Units Generated</td>
<td>2,07,96,802 KWH</td>
</tr>
<tr>
<td>Pay Back Period (for SMC fund)</td>
<td>40 Months **</td>
</tr>
</tbody>
</table>

The completely integrated plant has successfully generated 500 kWe during the trial runs leading to commissioning. This plant was put on trial run in October-2003.

TRANSFERABILITY

After successfully commissioning of prestigious power plant at Anjana STP, SMC took quick actions to setup other Sewage gas power plants at three STPs at Singanpore, Karanj and Bhatar. Singanpore with capacity of 100 mld, 100 mld and 120 mld each. These STPs are set up on Conventional Activated Sludge process. In very short duration of ten months, these projects have been commissioned in 2007-08 and are now operational and providing electricity to respective plant equipment. Afterwards, two Sewage Gas based power plants were established at Variav and Bamroli Sewage Treatment Plants in Nov-14 & Apr-15 respectively. In addition, one more plant is installed at Dindoli Sewage Treatment Plant, which shall be commissioned in near future.

Main outcome of this initiative are following:

➢ Saving of grid power will reduce the use of fossil fuel for power generation.
➢ It is well known that energy saved 1 unit at user end will reduce generation of 2 units (considering the transmission loss, etc.)
➢ Therefore, Distributed power generation through such type of power plant is always benefited to project proponent and society.
➢ Reduction of emission of greenhouse gases for the protection of environment.
GIDC Industrial area with textile processing units and chemical industries has a water demand of 90 – 100 MLD. SMC is providing average 55 MLD continuous water supply for about 20-22 hours daily on volumetric basis. The remaining demand is met through private sources including bore wells and water tankers. SMC had decided to implement a project to supply industrial grade water by tertiary treatment of sewage from the Bamroli Sewage Treatment Plant (STP) to Pandesara Industrial Estate through a Public Private Partnership (PPP). For that SMC has constructed 40 MLD capacity Tertiary Sewage Treatment Plant to treat secondary treated water from Bamroli Sewage Treatment Plant and to recycle, generate & supply Industrial Grade Water for Pandesara Industrial Estate at a capital cost of Rs.85.10 crores.

MOBILIZATION OF RESOURCES

SMC decided to take up the project by own fund and also operate the plant with own fund whereas regular income from the industry emerge by selling tertiary treated water to industries with agreed terms.

RESULTS ACHIEVED

After commissioning of Tertiary Treatment Plant at Bamroli, SMC is now able to spare about 40 MLD potable water. And revenue income from the water supply is also in line with the requirement. The rate of potable water is Rs.23/- per kl and the rate of tertiary treated water is Rs.18.20/- per kl with indexation base rise every year. The weighted average rate is now being considered as per the actual consumption. Meter reading, checking, monitoring & surveillance activities are performed regularly departmentally. Computerized bills are generated and issued bi-monthly.
E. DISASTER PREPAREDNESS – GRID NETWORKING IN WATER SUPPLY MANAGEMENT

Water Supply System of Surat City is dependent on surface water or River Tapti. Surat City used to face flood or alike condition every four years. In order to supply, at least lifeline supply in any eventuality, water supply system of Surat Municipal Corporation has developed GRID connectivity which connects water works, water distribution stations and pumping stations of water supply system. As on date, mostly all water works and major water distribution stations are interconnected in such a way that in case of any abnormality or shut down of any water works, water can be catered from the other water works or water distribution station. The GRID network has actually been proven as a boon during the floods of August 2006 and with the help of the same, entire water supply system could restored within 36 hours only.

MOBILIZATION OF RESOURCES

In year 2001, dedicated energy efficiency cell was established who used to monitor the electricity consumption, conducting energy auditing for water supply components etc. Main focus was on delivery of water from water works to water distribution station on most energy economic route, hence GRID network was developed.

RESULTS ACHIEVED

GRID system so developed; had benefited during floods of August 2006. Water to the western part of the city was supplied with the help of GRID system though western part of the city was submerged in flood water. Water supply department staffs are motivated to face any challenges in water supply.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Parameters</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Connected Water Works and Water Distribution Stations</td>
<td>All water works and major water distribution stations are connected till date</td>
</tr>
<tr>
<td>2.</td>
<td>Specific Energy Consumption in Year 2001</td>
<td>375 KWh/ML</td>
</tr>
<tr>
<td>3.</td>
<td>Specific Energy Consumption in Year 2014-15</td>
<td>276 KWh/ML</td>
</tr>
</tbody>
</table>
| 4.      | Issues which can be addressed with the help of GRID networking | • Equitable distribution of water through energy economic transmission route  
• Management of water supply in case of power failure at any water works  
• Shutdown of any waterworks  
• Water quality issues / dilution of water etc. |
F. IMPLEMENTATION OF RAIN WATER HARVESTING FOR GROUND WATER RECHARGING IN SURAT CITY

Surat City is a coastal city and as a result, intrusion of saline water in ground water is unavoidable situation. In order to prevent the salinity intrusion and to make water table higher, Ground water recharging through execution of rain water harvesting has been made mandatory. Now necessary provision in building bye-laws has been made and through this provision, RWH structure(s) has been made mandatory for all high rise buildings.

Moreover, Surat Municipal Corporation on its own is implementing RWH structures for Municipal Properties. Once implemented, routine monitoring for essential parameters is made mandatory to ensure the benefits of RWH. More than 348 RWH structures have been executed exclusively in various municipal properties. Having realized the benefits, financial provision of Rs.1.0 Crore is made for execution of RWH structures in year 2015-16 along with maintenance of the same.

RESULTS ACHIEVED

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>PARAMETERS</th>
<th>PERFORMANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Total numbers of ground water recharge bore structures executed by private plot owner / developers from 2004 to 2015</td>
<td>Around 6000</td>
</tr>
<tr>
<td>2.</td>
<td>Total Numbers of RWH structures executed up to March 2015 by Water Supply Department for Municipal Properties</td>
<td>348</td>
</tr>
<tr>
<td>3.</td>
<td>Average rise in water table where rain water harvesting structures executed</td>
<td>0.98 meter</td>
</tr>
</tbody>
</table>

Moreover, other than private owners / developers, SMC on its own prepared list of municipal properties where RWH structures can be executed. Necessary financial provision is made every year.

PROCESS

• Provision of RWH through incorporation of building bye-laws is made by Town Planning Department of SMC and based on which, following provisions are made.

• It is mandatory to install RWH in all new development permission for unit above 500 m2 upto 1500 m2

• For plot area exceeding 1500 m2 upto 4000 m2, owner / developer has to provide / construct percolating well with RWH.

• Rebate scheme for Rain Water Harvesting for :
  - Residential societies, apartments
  - Industrial units
  - Open plots

• Subsidy offered by SMC for People participation – 50% of actual amount or Rs. 2000/- (whichever is more).
G. USE OF WIND POWER FOR WATER SUPPLY SYSTEM

SMC has implemented Energy Efficiency (EE) and Renewable Energy (RE) measures which have rendered 6,12,92,813 Units per annum. Under “Solar City” Master Plan installation of 21 MW capacity Wind Power Plants has been planned till 2016-17. 3 MW capacity wind power plant had already been commissioned on 02-Nov-2010, which was installed before implementation of targets planned under “Solar City”. With installation of 3 MW wind power plant @ Adodar (Dist: Porbandar), SMC became the first Urban Local Body in India to achieve such landmark. Commissioning of 8.4 MW capacity wind power plant had been completed in Jun-Jul’2013 @ Bhanvad (Dist: Jamnagar). Commissioning of 6.3 MW capacity wind power plant had been completed on 29-Sep-2014 @ Ratdi (Dist: Porbandar). Before installation of wind power plants average specific energy consumption (KWH/ ML of produced water) was 280.43 (FY: 2008-09). After installation of 3 & 8.4 MW capacity wind power plants, energy consumption is reduced to 221.31 KWH/ ML i.e. specific energy consumption has been reduced by 21%. All these three plants are generating energy in tune of Rs. 3.5 Crores KWH/ annum.

PROCESS

- Tender was invited in Jun-2008 and only one tenderer- Suzlon Energy Ltd. had quoted. Considering only one offer had been received, it was decided to re-invite the tender. Tender was re-invited in May-2009.

- Again, only Suzlon Energy Ltd. had quoted and consequently Suzlon Energy Ltd. had been entrusted the work including O & M of entire plant for 10 years.

RESULTS ACHIEVED

- Though wind Power Generation isn’t directly connected to citizens, however, electricity bills accounts for more than half of operation & maintenance cost; energy generation from wind power plants will reduces O & M cost considerably.

- It was planned to use, energy generation from wind power plants at all HT services used for water supply system. Already, 17 HT services of out of 20 services are taken into consideration for use of electricity generated from wind power. It was expected to reduce overall operation & maintenance charges by 30% and covering more than 95% of total city population. More than 90% of population is being already covered under benefits of energy generated from wind power plants.
Surat with a population of 4.46 million (2011), has faced inadequate, discontinuous supply of public transit system in the past. The city totally depends on 3-wheelers acting as para-transit and private vehicles as chief mode of transport. Further, the road network in the city is incomplete. As a sustainable and smart mobility solution for future, Surat prioritized implementation of BRTS. The system provides safe, affordable, efficient and fast mass transit system in the city.

Various initiatives as a part of Urban Transport Planning are undertaken:

- Preparation of City Traffic and Transportation Study (CTTS)
- Development of Bus Rapid Transit System (BRTS)
- Planning of inner ring road as High Mobility Corridor (HMC)
- Electric Vehicle system (8-10 seater) for connectivity within Walled city
- Integrated Mobility Management Centre (IMMC) and Ferry service (under consideration)

MOBILIZATION OF RESOURCES

Financial: Funding pattern for different services included as a part of integrated transit systems are as follows:

Following table shows the funding pattern of the BRTS phases.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Project under:</th>
<th>JNNURM</th>
<th>GoG</th>
<th>SMC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I</td>
<td>JNNURM</td>
<td>30</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>Phase II</td>
<td>SMC Funds</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Phase III</td>
<td>SMC Funds</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

The infrastructure development will be funded by SMC and revenue generation by SMC for Urban Transport Projects.

- Other sources of revenue proposed are as follows:
  - Transport terminal and off-street parking projects
  - Land Value Capture
  - Increase FSI on major corridors and additional FSI to be sold at a market price.
  - Use of public land strategically to promote public transit and also to capture value. Terminals are planned at strategic locations to exploit the commercial potential.

Technical: Various technical assistances are provided by consultants for planning, design, IT, finance, architecture, implementation and operations planning.

Human resources: SPV named ‘Surat SITILINK Limited’ is developed for management of operations and maintenance of Surat BRTS, HMC and City Bus services. For the above tasks, special staff has been appointed by ‘SITILINK’ board of director.
RESULTS ACHIEVED

There are number of achievements by this project, which are following:

- Improvement in the living conditions of the Community.
- Capacity transformation of organization, targeted area or community and implementing agency.
- Changes in the local, national or regional, social, economic and environmental policies.
- Addressing and recognition of issues and constraints both at local, regional and state level.
- Changes and involvement of resources-Financial, Technical, Human from national level to local level

- Confidence built up in community, changes in behavioral attitude and responsibilities etc.
- Achievements, Impacts and Benefits of System:
  - Increase in passenger ridership: (from 1.6 lakh monthly to 5.5 lakh after inauguration of canal corridor.)
  - Improvement in travel speed:
  - Dependable Service/Reliability: Over 95% of arrivals/ departures are on time.
- Improvement in travel speed, Reduction in accidents, Reduction in greenhouse gas emissions, Reduction in air and noise pollution.
- The system has been widely accepted and used by the people of Surat.
Other Entries
The entries are divided into following categories:

- **URBAN GOVERNANCE**

- **HOUSING, URBAN POVERTY AND INFRASTRUCTURE**

- **ENVIRONMENT MANAGEMENT, ENERGY CONSERVATION AND GREEN BUILDING**

- **SANITATION**

- **URBAN DESIGN AND REGIONAL PLANNING, INNER CITY REVITALIZATION AND CONSERVATION**
SHIMLA MUNICIPAL CORPORATION

Swachhta Helpline – An innovative Approach on Complaint Redressal

Shimla city alone generates approximately 90 tons of waste per day. To collect the waste from the generation point itself, Shimla Municipal Corporation (SMC) framed the Door-to-Door Garbage Collection Bye-Laws in the year 2006 for putting in place an effective Door-to-Door Garbage Collection (D2DGC) system in the city so that the waste generated in the city is collected from the door step itself and to prevent littering. Later SMC formed a society to carry out the activity of Door-to-Door Garbage Collection. Therefore Shimla Environment, Heritage Conservation and Beautification (SEHB) society was formed. All the D2DGC within the city is done through the SEHB society by engaging more than 500 employees in it.

In order to address the issue of sanitation and maintaining cleanliness around 24 hours, Shimla Municipal Corporation launched “Swachhta Helpline – 1916”- a 24 hour helpline. The Swachhta Helpline (SHL) was launched by Hon’ble Chief Minister of the State on 02.10.2015 A vehicle called as “Swachhta Vahan”, along with two sanitary workers has also been dedicated to attend to the complaints being received through this helpline. The vehicle is available from 7 AM to 9 PM on all days of the week to attend to any complaint regarding sanitation. Any littering of garbage can be reported on the helpline by anyone in the city and same is attended by Swachhta Vahan on priority. This vehicle was re-painted with the slogans and message for spreading the awareness on keeping the Shimla city clean.

To monitor this helpline, nodal officers have been designated in all the 25 wards of SMC. These nodal officers are responsible for smooth implementation of garbage management and overall cleanliness. A WhatsApp group of these officers have also been formed. This WhatsApp group created for addressing the issues of sanitation also includes the Mayor, Dy. Mayor, other councilors and concerned officers of SMC so that the flow of information/complaint is taken on priority and same can be monitored in a given time. The feedback on complaint attended is also reported back on the WhatsApp group.

This is a continuous education program in which the students are being educated and sensitized on the issue of cleanliness. The students pledged to make the Shimla city litter free and therefore voluntarily showed their willingness to be a part of Green Force. Green Force involved total of 20 students daily coming from different schools of the city patrolling the core area (ridge & Mall road) for preventing littering in this area. The students in group of 2-3 members walk across the ridge and mall road area and blow the whistle loud whenever they see anyone littering on the public place. Hence the green force was also known as “Whistle Blowers”.

Through above initiatives it was observed that public is proactive in participating in efforts for making their city clean as more and more people are putting these services into use and reporting sanitary issues. This is the rising consciousness among the public which has backed the SMC in carrying out these activities successfully.

For sustainability, user charges are levied for construction and building waste, and the waste from commercial establishments. Municipal Corporation Shimla is also spending lots of revenue in cleaning the city, in addition to this direct cost littering also harms environment, and tourist activity in city. To discourage littering SMC is making continuous efforts through various techniques of which one is to levy penalty on any form of littering. With initiation of this, SMC has
received a good response and there is tremendous change over the past scenario.

The success of Swachhta helpline has led an overall improvement in sanitation service in city of Shimla. All the areas which used to experience continuous littering are now clean whilst there is reduction in complaints from local community.

This innovative model of cleanliness especially for tourist towns can be replicated in anywhere in the country. This effort has not only shown very good results in market areas but has also made citizens more responsible to get connected with door to door service of Shimla Municipal Corporation.

**CHHATTISGARH HOUSING BOARD**

*e – Awas, Chhattisgarh Housing Board Computerization*

With a view to introduce complete transparency, speedy allotment, accountability, monitoring of activities and public centric services, Chhattisgarh Housing Board with the help of National Informatics Center has in house developed an application named e-AWAS. The implementation of e-AWAS has transformed into better managed system which results in increased credibility, enhanced satisfaction to citizens, paperless work, and increased efficiency and reduced litigation. This is considered the primary tool to facilitate the access of the citizens to various services like searching and buying the vacant property of Chhattisgarh Housing Board. e-AWAS in itself is an Enterprise Resource Planning (ERP) developed to facilitate e-Governance and g-Governance.

Housing Board constructed approximately 80,000 properties across Chhattisgarh which resulted increased workload and accountability, conventional file system was not sufficient to provide customer flexibility and satisfaction. Also documentation handling.

e-AWAS is developed with a concept of decreasing workload, increasing accountability and to provide better and improved services to citizens. It helps employees of CGHB to manage the files of different sections with a vast Database.

*e-AWAS is initiated with the joint efforts of NIC and Chhattisgarh Housing Board. NIC has played an inherent role in steering e-governance projects in governmental departments at National, State and District level, enabling wider transparency and promoting centralized planning and management which has resulted in better efficiency and accountability of government services. It holds the potential to facilitate the complementary use of information systems in government comprising both operational and strategic use. NIC supplied manpower for developing and designing interface of e-AWAS under extensive guidance and time-to-time assistance of CGHB officials.*

Governmental organization worldwide especially in India are facing several challenges as administrative, executive and judicial bodies continue to evolve into an electronic work environment. In the wake of the transition from paper based to electronic processes several key challenges has been faced by CGHB. They are largely attributed to various front-end and back-end challenges that the government continues to face. Front-end challenges relate to user-specific issues
such as high illiteracy levels, non-availability of user
friendly interfaces, low broadband penetration and most
importantly, lack of awareness in e-Governance. On the
other hand, back-end challenges relate to technical,
and other working issues within the government. These
issues include lack of systems integration within a
department, lack of integration across government
departments, limited knowledge of using computers
at various levels of bureaucracy and deployment of
technology without proper process re-engineering.

e-AWAS is conceptualized with a view to delivering
Government to Employee i.e. within department
and Government to Customer online services of
Chhattisgarh Housing Board with respect to sale of
residential and commercial properties. Major services/
activities included under e-AWAS are:

➢ Transparent Website (www.cghb.gov.in)
➢ Estate Management Module
➢ Accounts Management Module
➢ Right to Information
➢ Time Limit Monitoring System
➢ Help Line
➢ Lok Seva Guarantee Adhiniyam
➢ Samriddhi Online
➢ Citizen Login

From 1st April, 2015 decision was taken by the Board
that complete working related to Estate Management
and Accounts will be done online directly and no manual
work will be allowed. The best highlight of e-AWAS is
that investors can pay installment without going to any
board office. Citizens or beneficiaries can also see
installment payment details and ledgers related to their
house.

e-AWAS is genuinely G2E application. The objective
of G2E is employees to be able to improve effectiveness
and efficiency, eliminating delays in processing and
improving employee satisfaction and retention. Internal
efficiency and effectiveness, adopting commercial best
practices in CGHB increases customer satisfaction
and transparency. It also increases advertisement
and promotion of vacant properties. All processes are
managed professionally by e-AWAS and reduce the
personnel efforts. Online Lottery, one of the highlighted
features of e-AWAS, lottery notification to registered
investors with date and timing. This application helps
to achieve speed and scale in reporting and minimize
manual data entry. It gives faster time to disclosure with
streamlined data collection, auto-complete disclosure
and workflows.

e-AWAS gives Housing Management services to
CGHB. It brings the customer and employees to close in
this age of technology. Samriddhi Online, another portal
of e-AWAS helps people to search vacant property of
CGHB with layout, building plan, sitemap and pictures.
CGHB officials can regularly monitor status of housing
property with proper report format. Monitored work
progress and expenditure online takes care of financial
matters, income and expenses and managing cash
flows. Other part such as Time Limit Monitor System,
RTI, Help Line, Lok Seva Adhiniyam are important
sections of e-AWAS. These services assist e-AWAS
and increases communication between CGHB Divisions
and Zones.

CGHB is committed to give the citizens flexibility,
comfort, easiness and assurance of happiness. For this
purpose, Automation was a necessary service required
by citizens as well as employees. e-AWAS gives this
satisfaction and easy approach to CGHB.
AHMEDABAD MUNICIPAL CORPORATION

Improving Living Environment of Urban Poor

Ahmedabad city has grown from 1.58 million in 1971 to over 5.5 million in 2011. Its area has increased from 90 sq. Km. to 466 sq. Km. It is facing a problem of growing slum population from 4.5 lacs to 7.5 lacs in 2013 residing in 712 slum settlements, with dismal housing conditions.

An innovative partnership was forged between the Ahmedabad Municipal Corporation, Private developers, representative committee of the families to be rehabilitated and the NGOs. In conjunction with the effort of the Government of India to move towards slum free cities, the state Government of Gujarat launched the slum development policy in 2010. As a part of the policy, the city of Ahmedabad partnered with the private developers, slum communities and NGOs to redevelop slums under the programme. Currently 12 slum pockets are approved; work is ongoing in 9 slums covering 3314 households. The policy has been further revised in 2013, based on experience, to enable scale up.

The AMC set up a housing department which spearheaded the process. A following slum rehabilitation committee was also constituted:

- Municipal Commissioner, AMC
- Standing Committee Chairman, AMC
- Chief Town Planner, AMC
- Collector, Ahmedabad District
- Chief Executive, Urban Development Authority
- Deputy Executive Commissioner, AMC
- NGO

The committee was responsible for notifying the slum areas, evaluating the proposals and assigning the Jantri to the value of the plots under consideration. It also coordinated with all other concerned departments at AMC including the State Government.

While no direct financial implication was incurred by the AMC, they had provided an FSI / TDR equal to the cost of construction to the developer, which would have otherwise been chargeable. Since these slums were on AMC land, the land was given free by the AMC towards the project.

The process was initiated by conducting a socio economic survey of the existing slums in the city: 691 slums with 1,62,749 households were enlisted in the socio economic survey, complete with total station maps and final plots delineated, following which builders were invited to put proposals for specific slum pockets. They were also encouraged to collaborate with NGO's for facilitating a minimum consent of seventy-five percent of the residents of each individual pocket.

Once preliminary written consent was available; a validation of the socio economic survey was undertaken jointly by the AMC and the NGO, to freeze upon the slum households. The developer entered into an agreement with each individual slum household, which was notarized by the Government. Photo Identity cards were issued to every household which were authorized by AMC and the builder jointly. The slum pockets for the development were then jointly demarcated by the slum representatives, NGO and the AMC to arrive to a consensus.

The slum dwellers then registered a housing cooperative and passed a resolution to appoint the developer for their particular slum. These processes were facilitated by the NGO partner, ensuring a presence of women representatives on the committee.

The developer then, drew up the plan, as per the relaxed development control regulation, subsequent to which clearance was sought from the SRC to begin project implementation. After the clearance, the residents were either provided transit housing or were facilitated to find alternative rental housing, the monthly rent for which is paid to the households by the developer for the entire period of transit.

A total of 12 settlements have been completed. To date work is
ongoing in 9 slums. Some of the projects are mentioned below:

1. Abhuji Kuvana Chhapra, Ambawadi

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<tr>
<th>Before Project</th>
<th>After Project Completion</th>
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<tbody>
<tr>
<td>Abhuji Kuvana Chhapra, Ambawadi</td>
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2. Kailashnagar, Sabarmati

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<td>Kailashnagar, Sabarmati</td>
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3. Salatnagar, Gomtipur

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<td>Salatnagar, Gomtipur</td>
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**PPP Project: Financial Sustainability:** The programme is sustainable financially since it is a win-win situation for the slum-dwellers and the developer slums get free pucca legal housing, and the developer profits by the extra available FSI and transfer of developmental rights.

**Environmental Sustainability:** The local environmental conditions will improve considerably because open defecation and water logging will stop. Access to potable drinking water will be ensured following which the health and hygiene of the communities will improve.

**Protection from eviction to slum dwellers:** Since legal titles have been awarded, the poor households are free from the fear of eviction.

**Empowerment of communities to maintain the housing:** The NGO is providing specifically designed technical trainings to the Cooperative housing society to efficiently manage the maintenance deposits and empowering them so as to bring transparency into the process.

**Reduction of flood risk:** Rehabilitation of slums on Sabarmati riverbank has reduce the threat of flood risk.

The project has been formulated in line with the “Housing for All” policy of the Government of India by 2020. The project emphasizes “In situ Redevelopment of Slums” thereby creating minimal disruption of lives and livelihoods. The project was initially implemented in 2010 and subsequently revised in 2013. The lessons on relaxation in developmental rights, implementation with community engagement and policy which tries to include maximum number of the poor till the year 2010.

The model will be better applied for metro cities where the difference between the cost of construction and land price is significant. Partnership with NGOs is necessary for effective implementation. The formulation of a slum notification committee and its regular meeting is the backbone of effective implementation.

**JAMNAGAR MUNICIPAL CORPORATION**

**Affordable Housing**

Government of Gujarat has introduced the Mukhya Mantri Gruh Yojana under the 12th Five year plan is to make urban Gujarat slum free by relocating almost 7 lacs family stays in slum of urban areas across Gujarat state. It was decided to provide Minimum carpet area of 25 Sq. mts and maximum carpet area of 30 Sq. Mts for each house with basic facility of 1 Bed Rooms, 1 Living Room with Dinning, Kitchen, Bathroom and Toilet for EWS.

Last year municipal Corporation area was increased from 35 sq. kms. to 135 Sq. kms due to inclusion of OGA around the city. Providing Housing and infrastructure and other basic facilities EWS and LIG has become the responsibility for Jamnagar Municipal Corporation. The project is funded on sharing basis by central Government, State Government, JMC and Beneficiary.

Under this scheme Central government is providing the subsidy of Rs. 75000/- per unit and Sate Government is providing the subsidy of Rs. 150000/-per unit. After deduction of Rs. 225000/- from the unit construction cost.
of dwelling unit remaining amount will be recovered from beneficiary up to maximum amount of Rs. 300000/- . If the amount of actual construction cost of dwelling is more than Rs 525000/- than remaining amount will be recovered by Cross subsidization. Cross subsidization will be achieved by commercial construction.

Only EWS houses are constructed in the township with carpet area 26.90 sq mts. The criteria for Family house hold income have been increase from Rs. 30,000/- per annum to Rs. 1,00,000/- per annum for EWS.

**Procedure for Selection of allottees**

i. EWS – Family Household income up to Rs. 1,00,000 (Rs. One Lakhs)

ii. Applicant or his family member should not have plot or own house on their name. Applicant should be Adult at the time of application.

iii. Applications For allotment of houses from beneficiaries are to be invited prior to commencement of the Scheme. Whole scheme is to be implemented on self-finance basis.

iv. Applicant will have to deposit minimum 20% of total cost of house to implementing agency after deduction of deposit while application within 3 months after draw. Remaining 80% amount applicant will have to pay in 10 equal installments. Maintenance deposit and other charges will have to pay with last installment.

v. Reservation certificate has to submit after asked to submit as per prescribe regulation.

vi. Houses will be allotted based on computer draw system as per the rules and regulations of implementing agency.

vii. After completion of construction and While allotment applicant has to pay all due towards the house. Only after that he will be given the possession of House.

viii. Implementation agency will provide necessary documents to applicant to get the bank loan.

ix. Before getting the possession of house applicant will do conveyance deed with implementation agency.

x. Association of the beneficiaries will be formed and the members of that association will be responsible to provide the basic services such as Water supply, Strom Water Drains, Street Light, Road, Lift as per the instruction of implementation agency. They will be responsible for its maintenance also.

xi. Implementation agency will deposit the maintenance deposit amount in the account of association at the time of transferring the general services. That can be used for providing general services.

xii. Implementation agency is implementing these projects at very reasonable rate and on land reserved for affordable housing, so Applicant can’t transfer house for seven years from the date of allotment.

Jamnagar city is currently suffering from housing shortage. Considering this project and other ongoing housing project JMC will solve little part of the housing shortage.
the basic services such as Water supply, Strom Water Drains, Street Light, Road infrastructure, Lift as per the instruction of implementation agency. They will also be responsible for its maintenance.

There are 32 shops for local commercial for residing community day to day purchase and other necessities. Community Hall and publicpark also for senior citizens is provided for better environment and health.

The design level also adopted rain water harvesting system for recharge water level. JMC intends to extend same housing scheme to the covered other beneficiary.

**Bhopal Municipal Corporation**

**In Situ Rehabilitation Scheme (Affordable House) for Urban Poor in the City Bhopal under BSUP by Bhopal Municipal Corporation**

Bhopal is one of the 65 cities identified for funding development projects under JNNURM. The civic infrastructure growth and service standards however fall short of the actual requirements. The JNNURM seems to be a big opportunity to enhance the city’s infrastructure image, quality of service and standard of living. Around 8.81% of Bhopal’s population was living in notified slums in the year 2000. Due to lack of planned settlement and shelter for the urban poor, Bhopal has witnessed mushrooming informal settlements. In the lines of the objectives of the BSUP Sub-mission, the Bhopal City Development plan 2005-12 formulated under JNNURM by Bhopal Municipal Corporation as a shared vision of residents of Bhopal. 12 Projects of Rs. 341.01 Cr sanctioned under JNNURM sub-Mission of BSUP by Ministry of Housing & Urban Poverty Alleviation, with an approved cost of Rs. 704.65 Cr. Work on 12004 dwelling units after surrender units of 6448 dwelling units.

Bhopal Municipal Corporation (BMC) has been implementing various improvement programs in slum areas to make it habitable and hygienic. The in-situ rehabilitation scheme for urban poor under BSUP, JnNURM is located in Kalpna Nagar, Baba Nagar, Shyam Nagar, Shabri Nagar, Ganga Nagar/ Aradhna Nagar, Indira Nagar-I, Indira Nagar-II, Bajpai Nagar and Madrasi Colony, Arjun Nagar, Rahul Nagar areas of Bhopal city. The present project with a total cost of Rs. 341.00 Crore and construction of 18452 new dwelling units has a carpet area of 25 sq.mt.

The project has emerged as an innovative solution to slum rehabilitation challenges in the developing world. Its in-situ model and community development approach has made it a prototype of good governance in urban housing and poverty alleviation.

The Government has issued detailed guidelines on eligibility criteria of beneficiaries, composition of Ward committees, necessary documentation procedures, etc, for identification and mapping of beneficiaries. In-situ rehabilitation of existing slums is prioritized by Bhopal Municipal Corporation. An important initiative has been tying up bank loans for all JNNURM project beneficiaries. The Banks are issuing loans to beneficiaries of all JNNURM projects. The Government of India. State Government and ULB along with beneficiary share couldn’t sufficient for Housing Project completion. HUDCO Bhopal supported the proposal with a loan assistance of Rs. 213.05 Crore to BMC. All localities are facilitated with basic infrastructure such as roads, piped water supply, sewerage and sanitation. Resident welfare association in every locality to manage and operate the common asset created under the project. Other Govt. Schemes for livelihoods support, health, women & child development are been coordinated and sensitized to the beneficiary group. This program is sustainable financially as the developed slum gets free pucca legal housing. The community processes are strengthened and social awareness is created. The local environment conditions improves considerably as open defecation and water logging stops hence there is access to potable drinking water.

**Bangalore Electricity Supply Company Limited**

**Distribution Automation System**

BESCOM has embarked upon a project to automate the 11 kV Distribution network for efficient monitoring, control and operation of the network in Bangalore City (BMAZ area) by providing suitable control and communication equipment with the assistance of Official Development Assistant (ODA) Loan. The aim of the project is to reduce the power outages duration and improve performance of the utility by minimizing loss of time for fault location and restoration due to manual operation. It ensures reliable power supply effectively arrests the consumer hours lost because of power supply outages, thereby increasing the energy sales. The project is funded through external aided resources by Japan International Cooperation Agency (JICA). The total cost of the project is around 563.7 Crores out of which JICA is extending financial assistance 417.10 Crores for this project and the balance amount of 146.6 Crores is to be met out of BESCOM.
The DAS Project implementation comprises of seven interrelated construction packages for establishing infrastructure and automation devices suitable for automating of the 11kv Distribution system in BMAZ area. The scope of works in the project involves:

- Replacement of overhead lines by Aerial Bunched cables, replacement of existing RMU’s, Remote Terminal Units (RTU) with communication facility at all RMU locations.
- Establishing two active Control Center facilities with necessary communication, hardware and software.
- Establishing a stable backbone communication network between Control Centre and field equipment.

The Payback period for the project (as assessed by third party external agency CSTEP) is around 14 years and ensures reliable power supply to consumers 24 x 7. It is very useful and has the following benefits:

- Provides assured quality and reliability of power supply.
- Improves quality of service management and customers satisfaction.
- Avoids loss of time for fault location and restoration due to manual operation.
- Improves the reliability of power supply in Bangalore City thereby increase in energy sales and hence revenue.
- Integrates all IT related activities on to a common Distribution Management System.
- Improves Network Control management.
- Optimizes power flow.
- Enables of online energy audit (AMR systems).

RAJASTHAN AWAS VIKAS INFRASTRUCTURE LIMITED

Affordable Housing

Government of Rajasthan had set goal of sustainable development of housing as “Affordable Housing in Public Private Partnership (Sahbhagita Awas Yojana) for all and integrated habitat development with a view to ensure equitable supply of land, shelter and services at affordable prices in Rajasthan, with special focus on Urban Poor and excluded groups of society”. “Affordable Housing Policy 2009” issued by Govt. of Rajasthan contains 5 models of Affordable Housing, out of which Model – 2 with Public Private Partnership is new innovative approach to ensure housing to Urban Poor within affordability as per his income. Under this PPP Model, selected developers with own land would take up construction work of EWS & LIG houses/flats (G+3) on minimum 40% of land (50% EWS & balance LIG) and MIG-A houses/flats (G+3) on minimum 12% of land. The 48% land would be used for MIG-B & HIG housing. The EWS, LIG & MIG-A houses shall be constructed with all urban infrastructure development on predetermined cost to be given to nodal agency, i.e. Rajasthan Awas Vikas Limited to be delivered to beneficiaries of EWS, LIG & MIG-A Income Group. Here the land including development cost is not charged from beneficiaries but incentives given to Private Builder & Developer as under:-

- FAR doubled (Allowed then Normal FAR)
- 0.5 FAR in addition if project completed before stipulated date of completion
- Zero external development charges
- Zero Agriculture land use conversion charges.
- Zero Township layout plan & building plan approval fee.
- Commercial area allowed 5% for EWS & LIG area & overall 10%.
- Fast track approval. (within 30 days of application)
- TDR 1.5 if FAR could not be utilized in particular project.

Private Builder & Developer having minimum 5 acres of land, with experience of undertaking township on at least 2 acre of land, having technical experience in construction business for last 3 years and having good net worth at least 10% of the project cost is eligible for undertaking Model no.2. These main basic criterions itself take care of finance, technical and human resource mobilization of the successful implementation of the project. At least 40% land for EWS & LIG houses and 12% land for MIG-A houses i.e. 52% land along with constructed houses shall have to be handed over to the nodal agency Rajasthan Avas Vikas & Infrastructure Limited but Govt. has allowed para-passy to avail bridge loan from financial institutions & banks for construction purpose till the beneficiaries funds come into force. The beneficiaries initially contribute towards its registration amount. After allotment of houses the beneficiaries deposit the requisite amount as per demand letter with availing housing loan as
per ISHUP scheme and normal home loan as per his paying capacity. Thus, as per the stages of construction the required funds are paid to the Private Builders & Developers. NGO’s were engaged to help beneficiaries in availing home loan from Banks as these categories could not even fill the loan applications form etc. Project wise NGO’s & Banks were pre-selected to avoid inconveniences to beneficiaries. The escrow accounts for each & every projects were opened to well manage the installments paid by beneficiaries and to be released to Private Builders & Developers as per stages of construction mentioned in Tri-partite agreement.

As per the guidelines of “Affordable Housing in Partnership” of Govt. of India detailed project reports of projects were prepared & submitted to MoHUPA. For ensuring quality assurance & quality control in construction, the testing laboratories were established in every project site. For third party inspection the Malviya National Institute of Technology (MNIT), Jaipur & MBM Eng. College, Jodhpur were engaged for third party inspection with satisfactory recommendation the payment of running bills recommended for release of payment from ESCROW Account of that project. The housing loan with interest subsidy of 5% to EWS & LIG beneficiaries under ISHUP of MoHUPA was initiated by earmarking citywise, projectwise & bankwise, NGO’s to prepare the loan applications to be submitted to banks as these category people could not approach the banks.

Earlier it was thought that PPP model could only be successfully implemented in large urban infrastructure development such, road, electricity, solid waste management etc. but the model no.2 PPP for housing has opened a big way that if proper incentive oriented urban policies are framed then the results would be different and the public private partnership shall be a win-win situation both. On same lines Govt. of Rajasthan has launched “Jan Awas Yojana” in 2015.

NRDA has been gradually developing infrastructure, utility and social projects. As of now, many projects such as Secretariat and Directorate (Capitol Complex), HOD Building, International Cricket Stadium, BRTS, IIIT have been successfully completed and are functional. Furthermore, many projects are upcoming which include Jungle Safari, Golf Course, Film City, Snow Park, Amusement Park, Laser and Musical fountain park, Toy train, Asia’s largest botanical garden, Central park, Water sports, IIM Raipur, AIIMS, International Convention Centre, Logistics Hub, etc.

Housing For All

21 residential sectors; each one having a sustainable, self-sufficient and pedestrian friendly neighbourhood with a gross density of 250 persons per Ha with an approximate population of 16,000 each has been developed. Currently 8,946 dwelling units have been constructed in Sector 17, 27, 29 and 30, out of which 20-30% are already occupied. 15% of the total number of dwelling units constructed will be designated to the economically weaker section group and 1% of the net residential area will be allotted to the informal sector.

Rehabilitation and Village Development

Core area of Naya Raipur has 14 rural settlements and out of which only one settlement NAYA RAKHI has been relocated and rehabilitated. NRDA is paying higher than the market value of the land and is also providing additional rehabilitation packages annuity (2012-13 to 2030-31) at the rate of Rs 15,000 per acre per year with an increase of Rs. 750 per year to the owners who have already sold their land.
to NRDA. Around Rs. 19 Crores has been deposited in the account of the concerned owners and certificates were also issued for the waiver of stamp duty to purchase the land within 3 years anywhere in the state of Chhattisgarh up to the amount received from NRDA.

Naya Raipur Development Authority has addressed the human issues very well. In this project not only those who lost their private land have been rehabilitated but also those who were in possession of government land have also been adequately compensated. The allotment of residential plots has been in accordance with a new rehabilitation scheme called Village Development Plan (VDP). VDP as the name suggests is plan of holistic development of roads and sewerage and other infrastructure of villages to facilitate good quality of life.

**Basic Services to the Urban Poor and Skill Development to the Youths**

Naya Raipur Rehabilitation Scheme has addressed to the grievances of landless labourers, wherever 50% or more of agricultural land is acquired for the project. The Authority has undertaken training of youths to develop their skills and has provided them employment in various trades. Towards women empowerment, NRDA is training women for tailoring.

**Naya Raipur Mukhya Mantri Awas Yojana**

NRDA through Chhattisgarh Housing Board is also taking up exclusive housing for economically weaker section and low housing group. A scheme for 40,000 families distributed across city is in pipe line. 20,000 houses will be constructed for economically weaker sections and 10,000 houses for LIG – A category.

In interest of public, the state government will give grant of Rs 1 lakh for each houses falling under EWS category while Rs 50,000 grant for LIG houses. Houses with carpet area of 27 square meter will be constructed for EWS category whereas 40 sq. mt. has been fixed for LIG – A and 60 sq. mt. for LIG – B category.

During a survey conducted by Vidisha Nagar Palika it was observed that almost 37.17% of the town population was either residing in slums or are in need of housing.

The absence of water supply, roads, disposal of human waste and garbage collection were the four most important factors that were proving to be major challenge for the health and well-being of people living in slums. During the year 2014-15 Nagar Palika assessed the conditions of slums and the council unanimously passed resolution to solve this problem. The goal set was:

**“To solve the problem of slums on priority”**

Due to scarcity of funds the ULB was not in a position to implement the project. Hence, the council decided to go for accessing the funds through Central Sponsored scheme RAY. The SLNA was approached by the Nagar Palika officials and “RAY” scheme was recognized as the only feasible option for improving the condition of Slums in Vidisha.

The plan envisages Vidisha as a “Slum Free City” with rehabilitation and relocation of as many as 100 slum dwelling units. With the combined efforts of ULB and citizens of Vidisha, the Vidisha Nagar Palika successfully got project commenced.

All the projects were formulated with rounds of extensive public consultations incorporating their aspirations of area development for their own locality while devising the development strategies. The localities under the study were taken-up with in-situ as well as relocation development framework in compliance to the set objectives of the Mission for providing housing near the place of occupation of the urban poor.

14 slum pockets out of which 6 slum pockets were covered under the scheme. As all the 6 slums proposed under the scheme are untenable as well as land is in scarcity so all the 6 slums are under relocation to Sorai Site.

Several challenges arose during the implementation of the project sanctioned under RAY. Based on the feed-back, comments and suggestions with the beneficiaries the designs of DUs were rationalized and an additional space is made available to the beneficiary on first floor, so that the beneficiary could construct an additional room in the future. All the localities have been equipped with street lights against the sanctioned component of the project. This has lead to the free movement in the locality. CC Roads are constructed in the area.

As per census 2011 Vidisha has a population of 1,55,951.
Quality Control measures were taken for Quality testing of construction material. The samples in the prescribed quantity & duration are regularly tested from Govt. approved labs. The Concrete Block, Brick Strength, Aggregate Gradation, & Cement Water ratio from Slum test was carried at prescribed intervals.

Aerobic BioFilter has been proposed for converting waste to fertilizer and also reducing water wastage.

The success of this effort rested on the belief of the participatory approach and community participation. It was observed that the people residing in semi-pucca and pucca houses of the selected slums also started approaching the Nagar Palika for similar housing. On completion of the project all the beneficiaries will get a pucca housing with water and sanitation.

Vidisha is the only Nagar Palika in whole district which has got RAY project approved and implemented the same as per timelines. The initiative of Nagar Palika Vidisha in constructing such a large number of housing units for the slum dwellers under RAY is highly appreciable. Institutional Mechanism developed within the Nagar Palika fully ensures sustainability of these initiatives.

Community Based participatory approach was adopted in the process hence sustainability and success of initiative remains assured. HUDCO and beneficiaries has almost resolved the funding financial contribution issues, which otherwise proved to be a major hurdle in similar projects.

DOON SHELTERS SOCIETY FOR THE HOMELESS, DEHRADUN

Operation and Management of Rein Basera

Doon Shelters Society is running Rein Basera for the homeless in Chakku Mohalla, Dehradun for last 6 years and providing self-less services to urban shelter less population. They are doing entire Operation and Management of Rein Basera on their own and through donation received from generous members of the society.

Doon Shelters Society approached the District Magistrate and finally the Government initiated the process for identifying the land. Foundation stone was laid on 22 April 2008 and MDDA, the local development Authority executed the construction and finally the Rein Basera was operationalized in the year 2010. At present the Shelters society is considering only adult men into their Basera as according to them they cannot depend on the society.

The inmates at the Basera are provided with clean and comfortable environment with the facility of clean toilets and water for drinking. The place has 25000 liters of water storage capacity, electricity back up of upto 3kv. Adequate firefighting equipment are also installed and maintained. A token of mere Rs. 5 is charged from homeless as registration fee to make them feel a part of shelters. The rest of funds come from donations and are also pooled by Executive Committee members as they have not taken any grants from the Government. The main focus of our services is to provide safe, neat and clean comfortable environment to shelter less population.

SAWANTWADI MUNICIPAL CORPORATION

‘Need Based Integrated Approach’ for Affordable Slum Development

The area of Sawantwadi town is 6.78 hectares and its population as per Census 2001 was 22901 whereas according to census 2011 is 23851 thereby showing a low growth in the past several decades @ 0.41% per year.

The condition of slums was very poor with very low to nil accessibility to city infrastructure like water supply, roads, sanitation, electricity. Majority workers were bamboo craftsmen who did not have any facility to present their work in market.

The first vision of this project was to improve the living condition of these communities in particular and of the city as a whole. When Government of India declared JnNURM, and IHSDP under it, it was a golden opportunity for the local body to approach GOI for the improvement of the locality.

Sawantwadi Municipal Council decided to prepare a DPR for this scheme. The DPR include following :

- Housing with electrification
- Roads and Pathways
- Water Supply System
- Sanitation
- Electrification – Street Lighting
- Storm water drainage
• Social amenities

The housing is provided to all 62 slum dwellers comprising of 288 commuters comprising 146 male and 142 female individuals.

The key hurdle during the planning process of this project was the demand of users, for individual house & their resistance for shifting to apartment or flat system. This played a key role in planning process giving rise to row housing. After trying several alternatives, the design was finalized which reflects the vernacular architecture, at the same time, the design is climate responsive & most effective in terms of space usage. The design also allows the scope for future expansion at individual level. Total no of houses constructed are 62 in number and each consists of 1 Living + 1 Kitchen with WC and bath on ground floor and bed along with terrace on first floor. All the other basic amenities (like water supply and drainage) were designed in consideration with the respective standards.

Social amenities like Community Center, Balwadi and Garden have been provided in this scheme.

Due to this development, beneficiaries got the good living condition, neat & clean environment both physical and social. The people living over here have become integral part of the city. Over all the city environment has improved and people who are engaged in the business of bamboo craftman have got right place to work and sell their products due to which their financial condition also is improved. This was a lesson to all the neighboring municipal areas and many have taken inspiration from this. This has proved that, if a city like Sawantwadi can take the initiative in development of slum dwellers why not the others can. The initiative taken by Sawatwadi Municipal Council to eradicate slums from the city has drastically responsive to various parameters of sustainability and is perfectly ideal to be implemented in every city.

TAMIL NADU SLUM CLEARANCE BOARD

Voluntary Resettlement of Slum Facilities

The torrential rain in November and December 2015 devastated the Chennai City and the slum families living in hotels on the banks of water ways were severely affected and lost houses. These families were living in hotels in unhygienic conditions without basic facilities and were subjected to annual flooding and frequent fire accidents. In order to increase the flood carrying capacity of the rivers in Chennai and to provide livable houses to these slum facilities, the Hon'ble Chief Minister of Tamil Nadu ordered to resettle 25000 slum families in the tenements constructed in Okkiim, Thoraipakkam and Perumbakkam. The slum families living on the river margins in Chennai City are employed in service sectors/unorganized sectors nearby or elsewhere. They are availing the basic and social infrastructures available in core city.

The slum families residing in core city may be unwilling normally to move to the periphery of the city. These slum dwellers living in different locations with diversified occupational background when made into a single entity, poses a big challenge. In order to motivate the slum families to move voluntarily to the tenements in the periphery of the city the following practices have been adopted:

i. Resettlement schemes have been implemented as a planned integrated township near arterial roads like OMR with requisite infrastructure like roads, street lights, storm water drains, water supply, GENSETS, lifts for the tenements and social infrastructures like schools, ration shops, primary health care, convenient shops, play grounds, milk booth, bus terminus, gym, parks, police station etc.

ii. The slum families are sensitized about resettlement.

iii. The slum families are transported with their belongings from their existing locations through lorries during resettlements.

iv. TNSCB officials receive them at the site, conduct medical checkup provide food and water for three day with the help of other departments.

v. The floor of the tenements are decided according to priority like physically handicapped etc.

vi. Biometric data are collected.

vii. Tenements are constructed upto 400 sq.ft. with multipurpose room, bedroom, kitchen, bathroom, toilet etc.

viii. CFL lamps and electric fans are provided.

ix. Cleaning, white wash and colour washing the tenements before its occupation.

x. Individual electricity service connection is provid for which cost is borne by TNSCB.
living environments of the slum families have improved substantially.

Alongside rapid urban development, there has been a rise in the number of families lacking a decent dwelling space; Chhattisgarh in India is no exception. The State was formed in November 2000. Because of its mineral and forest wealth, the State moved on to the fast-track of development. The Housing Board was dismantled in 2002 in the hope that private sector builders will effectively serve the demand of housing and eventually a construction boom was witnessed. However, it soon emerged that the private-sector builders were focusing on the top-end and neglecting the low-end of the housing market.

First priority of the Government was to create an arm of its own for direct intervention in the housing market to serve the low-end demand. CGHB was re-constituted for this purpose.

To protect the interests of the low income group (LIG) and economically weaker sections (EWS) segments of the housing market, Chhattisgarh Housing Board (CGHB) was housing market, Chhattisgarh Housing Board (CGHB) reconstituted in 2004, with a clear mandate to focus on Low Cost Housing (LIG/EWS housing). Deendayal Awas Yojana was launched for LIG with an objective to provide a decent 2-bedroom dwelling unit at an affordable price of around Rs. 2,00,000. A target of 10,000 dwelling units was fixed and the scheme was a run-away success. CGHB then focused on economically weaker section (EWS) and launched New Atal Awas Yojana, guided by some radically new thinking. This scheme was also a great success and these two flagship Low Cost Housing schemes of CGHB have not only created a substantial housing stock, they have also had a catalytic effect to keep the prices of dwelling units built by privatesector builders under a check.

Naya Raipur is planned city and now becomes capital after formation of new state Chhattisgarh in the year 2000.

Naya Raipur Mukhya Mantri Awas Yojana is being started from January 2016 under Pradhan Mantri Awas Yojana – Housing for All (Urban) for the economically weaker section and low income group families on the sale price of Rs. 3,50,000 and Rs. 7,00,000 respectively.

‘Naya Raipur Mukhya Mantri Awas Yojana’ is special scheme to construct 40000 houses in which 20000 EWS and 20000 LIG flats are proposed to construct under PMAY - HFA in order to address housing shortage and creating affordable housing stock for economically weaker and low income group families. In first phase 7720 EWS and 7688 LIG flats are proposed for construction in this scheme.

Land: For implementation of both the schemes, finding low cost land was a major challenge. After Chhattisgarh became a State in 2000, urban land had become scarce, expensive and was available in remote rural areas. For the New Atal Awas Yojana, the Government ordered for provision of land at a notional price of Re. 1/- per square foot. The registration fee and Stamp Duty were waived to help CGHB keep the

**CHHATTISGARH HOUSING BOARD**

**Affordable Housing**

Alongside rapid urban development, there has been a rise in the number of families lacking a decent dwelling space; Chhattisgarh in India is no exception. The State was formed in November 2000. Because of its mineral and forest wealth, the State moved on to the fast-track of development. The Housing Board was
final cost of land low. However, these orders by themselves did not make land available. It involved intense work on the part of CGHB officials at the division level.

**Finance:** Ensuring access of EWS beneficiaries to bank credit was a major issue. This was necessary to sustain the self-financing model.

Under Deendayal Awas Yojana, more than 20,000 families have become owners of decent dwelling units.

Some beneficiaries resented the increase in the cost of the dwelling unit. This was largely due to time over-run in the project which was caused by an acute shortage of building technicians (masons etc.). The boom in housing and other construction activities created a shortage of manpower. CGHB therefore launched a Mason’s training program in which over 2,500 masons were trained by construction Industry Development Council (CIDC) New Delhi.

Experience with banks remained mixed and banks were reluctant to grant housing loans to lower-end segments of the market.

Nearly 80% of the urban population in Chhattisgarh belongs to EWS/LIG. Demand for housing from row-end segment is bound to continue for long. CGHB’s schemes have set the trend. The sustainability of the initiatives depends upon two key factors, as far as direct involvement is concerned: (a) availability of land; and (b) easy access of the LIG/EWS beneficiaries to bank-credit.

Three other States in India have adopted Deendayal Awas Yojana. The scheme is easily replicable, provided the agency can find low-cost land and organize access of the beneficiaries to bank credit.

**ODISHA STATE DISASTER MANAGEMENT AUTHORITY**

**Affordable Housing**

On October 12, 2013 Cyclone Phailin, hit the state of Odisha with wind gusts affecting 178 villages, damaging around 17,223 Households in Ganjam & Khordha districts of Odisha. This practice aims to provide disaster resilient houses to the affected households in the designated rural areas within the 5Km from the High Tide Line (Seashore, Chilika Lake) and covers seven block areas with around one lakh population in two districts mostly the fishermen, farmers & wage labourers for their risk mitigation and recovery from the regular cyclone they face frequently for their proximity to sea coast.

The method of construction of house has been decided to be Owner Driven Construction of Houses (ODCH). A policy guideline was so devised and a sum of Rs. 3,00,000 per beneficiary per house for construction of a 294 sq.ft. house having facilities like toilet, electricity & water supply was provided through joint account in tranches.

The beneficiaries are also encouraged to extend their own houses beyond 294 sq. ft. with own contribution and approved plan.

Priorities like free Government land of 1000 Sq. feet with 294 Sq. Feet of Carpet area; development of relocation sites, construction of around 314 tube wells to facilitate construction process, provisions of internal roads, civic amenities for community use, with a implementation deadline of three years fixed by OSDMA duly monitored by District Project Implementation Unit (DPIU) and supervised by Project Management Unit (PMU), OSDMA in collaboration with a Socio Technical support Agency (Gram Vikas).

The DPIU clears the land, provides patta (RoR) and monitors the construction at each level to create a feeling that beneficiary himself participate, contribute & own the house. Non-availability of Govt. Land in two to three rehabilitation sites made the Government to modify its land lease rules to purchase land from private parties, wherever necessary, to provide 1000 Sq. ft. land to each beneficiary in these sites.

Beneficiaries Selection meetings were disrupted as ineligible families were excluded, for which opening of joint bank accounts & starting of work got delayed. However, through continuous Community-Admin Interface, bottom-to-top linkage the issues of the heterogeneous local community were addressed.

Since more than 10,000 houses were constructed at a time, shortage of trained masons & materials were felt to speed up the work. A mason force of about 2500 was generated from among the beneficiaries through continuous skill development by the Socio –Technical Support Agency. Thrust was given to upgrade the skill of the women members of the affected families.

Technical Experts & the Consultants in consultation with experienced firms, architects & planners devised model plans for individual housing units as well as complete habitations having roads, drains, plantations, civic amenities, waste management etc basing on the total station survey, building
codes & Indian Road Congress (IRC) guidelines. Further, mason trainings for skill development & street theatres were also organized for full-fledged beneficiaries’ participation in the construction work.

A holistic factual & visual MIS package, encompassing the process of resilience i.e. from identification of beneficiaries to occupation of houses; from foundation level of house construction to finishing level in par with the five tranche levels of fund release; with real time uploading of data & progress, was put in place for effective monitoring & supervision of progress & implementing process.

A well laid out 4-tier grievance redress mechanism starting from Community Reconstruction Committee (CRC) was put in place from grass-root level to the state level at PMU OSDMA to encourage the overtly local atmosphere to come up with the genuine grievances of the people for common good. A task force was constituted at the DPIU level for quick disposal of the grievances so received at different levels.

The Social Construction envisaged through ODRP for the Phailin affected people in coastal district of Ganjam & Khordha of Odisha have a social projection to provide houses with Disaster Risk Reduction (DRR) features and other facilities. The social change which this project has triggered, influenced and created within a year time is remarkable because these self-sufficient, self-reliant and sustainable housing would help in furthering the livelihoods of the beneficiaries without disruption. Further, these clusters of houses with DRR features would also work as mini-cyclone-shelters in the times of adversity like recurring cyclone and floods in these areas. Housing colonies so created with provision of roads, drains, street light, and piped water supply will work as model villages of dignified living. The social construction, thus, triggered by ODRP will work as a benchmark in future construction of resilient houses in disaster affected areas of the country by replicating the plan, method & technique of ODRP in the service of mankind.

ODRP has to be seen as a Social projection and captures the social change which the ODRP has triggered, influenced and created in the re-location sites. Once it is captured, this can be an eye-opener for the future administrators, architects, planners, civil societies, in replicating the plan, technique of ODRP in similar such situation and context, in the service of mankind.
HARYANA POLICE HOUSING CORPORATION

Environmentally Sound Technologies

The State Vigilance Bureau of Haryana is operating from a rented premise at Gurgaon. In order to have proper co-ordination and complete facilities and infrastructure required for a highest Investigation agency of the state, the Authorities decided to get a new Environmental friendly building constructed in Gurgaon. The work for design and construction of the building was assigned to Haryana Police Housing Corporation, nodal agency for construction works for Police Department.

The building is situated at Sector – 47 near Medanta Hospital in Gurgaon. The site measures 1 acre and is surrounded by residential areas on two sides with independent housing and multistory housing. The site is free from any illegal encroachments and is the orientation of the building is kept keeping in mind proper natural light, ventilation and energy conservation. Architectural aesthetics were also considered so as to merge with the surrounding building environment of various MNCs in Delhi - NCR. Eco-friendly and energy saving construction materials are used and the front area has been kept green so as to give a soothing and fresh feel. Proper parking has been provided and the building has been completed on very economical cost with A class construction. The main objective was to have a building demonstrating usage of sustainable and parameter’s environmentally sound technologies.

The entire financial resources were arranged and mobilized by State Vigilance Bureau Haryana. The Rough Cost estimate was submitted by Haryana Police Housing Corp. to State Vigilance Bureau Haryana to seek the administrative approval of the project. On the basis of the said estimate, funds were received from Govt. of Haryana and administrative approval was granted accordingly. An Environmentally friendly architectural design was prepared by the Architect M/s Planner Plus, Panchkula for the said building and the same building was approved by the Director General State Vigilance Bureau Haryana.

Day to day inspection was carried out by the concerned site Engineers of Haryana Police Housing Corp. from starting of the project till the completion. A testing lab was also set up as per the IS code at site with the required test equipment. Times to time discussions were made with the client department i.e. State Vigilance Bureau Haryana during the construction of the work to implement some decisions modified as per the latest requirements.

Following Environmentally Sound technologies were incorporated in the building.

i. All RCC works (slabs, beams etc.) have been carried out by ready mixed concrete to avoid dust in surroundings locality.

ii. Complete building has been constructed by Re use of treated water received from Sewerage Treatment Plant HUDA.

iii. SS railing of 304 grade has been used in complete building instead of wooden railing.

iv. No wood work has been used to save the environment.

v. Heat resistant / Thermal resistant reflective glasses have been used.

vi. Provision of Solar water heating system have been made to save the energy.

vii. Heat resistant tiles have been used on roof top instead of conventional tiles.

viii. Energy efficient:- electrical fixture 5 star rating have been provided to save the energy.

ix. Water saving faucets having flow controller cocks etc. have been provided to save water.

x. Water harvesting well – 2 nos. have been constructed to recharge water table.

xi. Proper orientation is given for ventilation and sun rays in all corners.

xii. 75 % greenery have been maintained with specific trees which consume less water with drip irrigation technology.

xiii. Eco friendly false ceiling in complete building have
The Ministry of Drinking Water and Sanitation to launch a country wide week long campaign as National Rural Drinking Water and Sanitation Awareness Week.

The successful launching of Drinking Water Safety Week Campaign (DWSW) by TWAD Board was appreciated by UNICEF and assured that they would be willing to collaborate with TWAD Board for sustaining the momentum generated by this important initiative.

TWAD Board decided to have a synergic effort with all line departments that share the same goal of supplying drinking water to the community. The water quality data and the corresponding mapping made during the DWSW have identified quality affected habitations all over Tamil Nadu and remedial measures are being taken up by all the stakeholders.

At district level the executive engineers, TWAD Board, Rural Water Supply Division of all Districts and the District Collectors played a key role in disseminating the functions at District Level. As this week long awareness campaign has produced good results, it has now become part of the policy of Government of Tamil Nadu and there is a compulsion to outperform the activity every year.

More emphasis was made on the need of water testing and the possibility of testing their water samples in their own place. The public were requested to cooperate and to bring the samples from their houses and get it tested so that they can be aware of the quality of water they drink and know about the water quality issues.

The full – fledged psycho chemical bacteriological analysis of water sample for its portability could also be accomplished. The mass awareness on water quality and health issues given to community for continuous period of two years have taken away their ignorance and superstitious belief and developed confidence in preventing pollution and promoting water safety thereby improving living and health conditions. Based on the 5 lakh water quality data, the quality affected habitations were identified and remedial measures were taken up which has conspicuously reduced the number of quality affected habitation in nine districts. Government of Tamil Nadu has now started conducting nationwide awareness programme on National Rural Drinking water and Sanitation Awareness Week every year.

Due to continual activity, the public and students are mobilized to take up water quality projects. The FWTK developed by TWAD Board State Level Water Testing lab is recognized nationwide and distributed at an affordable price to many of
the states, Department of Science and Technology, Space Research and Application Centres, Ganga Rejuvenation projects etc.

The cooperation extended by all officers of the line department and district collectors have increased the interest and the viability of this best practice would definitely move on to the social mobilization in adopting good safe water practices for the betterment of the entire community.

DAKSHINA KANNADA NIRMTHI KENDRA, KARNATAKA

Providing Eco Friendly Facilities by Construction of Hostel Building for S.T. Students in Dharmasthala.

This project envisaged the construction of New Hostel Building for Aashrama School, a government rural primary school situated in the pilgrim centre of Dharmasthala in Belthangady taluk of Dakshina Kannada district of Karnataka. The project was to replace an existing 60 year old dilapidated structure with the objective of providing a modern safer, healthier and more conducive living space for the inmates who belong to Scheduled Castes / Scheduled Tribes.

The project was successfully completed on 09-01-2016. It is presently inhabited by students to full capacity. Aashrama School is a 60 year old school with residential facilities. As the hostel building was in a dilapidated state, it was potentially hazardous place of stay for the children. Hence reconstruction of the building had become an inevitable need for safety and healthy upbringing of the student-inmates. Implementation of the project posed several challenges.

Main hurdles encountered in the project were getting sanction for demolition and rebuilding of the structure, financial dependency, creating alternative accommodation to the existing inmates. These problems were solved by the support received from all sections of society like elected representatives of the region and the local people’s representatives, officials at different levels of government, as well as the parents of the students and the local people. With the active support of MLA and the local Zilla Panchayat members it was possible to get sanction for demolition and rebuilding of the structure.

The involvement of people’s representatives was also very helpful in getting sanction for the project to the tune of Rs. 337.35 lakh.

Due to this project, today children are able to live in a modern building in healthy living conditions. Modern hygienic toilets have been provided in the place of unhygienic one. Additional facilities like wardrobes, reading room / library, tuition rooms, wide passages and staircases are provided which were not there earlier. No timber has been used in the construction stage and except for main door, no wood is used anywhere else. This can be considered as a model project for the rehabilitation of numerous other similar old government institutions which have succumbed to the ravages of time and disrepair.

BELLARY CITY MUNICIPAL CORPORATION

Promoting innovative, cost effective & sustainable eco-friendly building materials & construction practice

Bellary Nirmithi Kendra has taken the initiative of environmental protection activity like scientific disposal of waste materials for productive activity thereby reducing environmental pollution. At the same time obtain economical benefits like production of building materials from wastes. At present Bellary Nirmithi Kendra is manufacturing High volume fly ash building products using fly ash and GGBS (Slag) from JSW Steel Plant, Thoranagallu. The key problem area is that it is a drought prone black cotton soil region with very low level of skilled work force with an array of activities lined up for construction by collaborating with the state Govt. schemes and programme.

Initially Bellary Nirmithi Kendra faced a lot of problems for the acceptance of fly ash building products and not allowed to construct Houses, Toilets and other infrastructure by the rural families. Efforts were made through education and created awareness about the advantage of using low cost fly ash productions over the conventional building materials like bricks, wooden doors and window frames etc. Today rural and urban Households are looking at Bellary Nirmithi Kendra for the technical services which are not forthcoming from other departments like PWD, Z.P Engineering etc. who are not accessible to their need easily. To improve the living environment Nirmithi Kendra gradually started putting emphasis on Training activity and conducted training to masons in latest construction practice technologies. As many construction work force were attracted to mining sector it is felt very necessary to train the youth in construction practices to promote the construction work force to support the construction trade.
SANITATION

TADIPATRI MUNICIPAL COUNCIL

100% Door To Door Garbage Collection, Segregation and Processing & Liquid Waste Management

Tadipatri Urban Local Body is in Anantapuram District of Andhra Pradesh, having population of 1,08,249 as per 2011 Census with a total extent of 7.49 Sq.Kms. Prior to the initiative more number of health complaints and irregular dumping of waste caused dissatisfaction in the public. To create eco friendly, livable and healthy atmosphere in the town, certain Reforms have been taken up in respect of Public Health Sanitation Wing in the year 2005, as well as to implement the orders of the Hon’ble Supreme Court on Solid Waste Management. Accordingly Micro Level Planning has been prepared duly covering all the 34 wards in the town including commercial and major important areas of the town for effective implementation of Solid Waste Management.

By this practice the total waste generated is decreased from 72 MTs to 40 MTs. 100% Door to Door garbage collection is implemented successfully and 85 % of Source segregation is implemented not only this rather 50% of the waste generated is processed scientifically as manure. Vermi composting, Box composting is practiced at compost yard and in-turn the fine tune manure is much useful to the agriculture formers. The dry waste collected by the health workers is sold out to the scrap buyers and in-turn they get economically benefited. Malaria case has drastically come down for 300-400 to single digit. Due to 100% ban on plastic use, percentage of waste compost of plastic is minimized. There are improvements in the living conditions and standards of the public in the town.

Due to involvement of the Public in sanitation activities the co-operation from them is much appreciable and it leads to sustainability. Reserve staff is also maintained in case of unexpected incidents. Separate waste collection system is maintained for market waste round the clock and the waste collected so far is utilized for Windrow / Vermi composting. Dress code and identity of the staff is maintained right from Public health worker to Municipal Commissioner for accountability and responsibility. Effective maintenance and timely redressel of Citizens grievance to create confidence among the public.

GREATER WARANGAL MUNICIPAL CORPORATION, TELANGANA

Swachh Warangal

Greater Warangal Municipal Corporation (GWMC) has taken up the Solid Waste Management Project to maintain

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<th>Financial Resources</th>
<th>Human Resources</th>
<th>Technical Resources</th>
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<td>The Govt and Govt of AP have sanctioned an amount of Rs.28.00 Crores for providing Under Ground Drainage System. An amount of Rs. 2.28 Crores were sanctioned under 12th Finance Commission Grants to procure the vehicles so as to improve the garbage collection &amp; transportation.</td>
<td>To motivate the public and to create awareness among them 1200 Self Help Groups consisting of 12,000 women members are involved in implementation of Solid Waste Management for cleanliness atmosphere in the town.</td>
<td>One Segregation Unit is established at compost yard for dry and wet waste so as to reuse and recycle the waste generated. Vermi compost shed is also provided along with windrow and box composting system so as to produce organic manure.</td>
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Storm water drainage system worth of Rs.2.25 crores is also improved with 13th finance commission grants. 20 Vehicles are donated. 200 Public Health workers are engaged by the ULB on outsourcing basis for door to door garbage collection and segregation. One JCB with four hydraulic Tractors are engaged to reduce the man power.
a clean and healthy environment in the city. Its vision is to achieve Zero Waste Management in the near future. GWMC in collaboration with ITC has created awareness among people about the importance of source segregation. Today GWMC is successfully implementing the project and has implemented Bio-methanization and it is using the power generated from market waste for lighting the administrative building and saving power bills. It is converting the organic waste into vermi-compost and making it available to farmers at a cheaper rate. It handles approximately 240 MT waste per day.

The GWMC has been allocating funds for the initiative and allotted Rupees 17,777.79 lakhs in the last five years. This amount is spent on acquiring the equipment, vehicles and also for conducting awareness campaigns. ITC PSPD has allocated Rs. 30 lakhs in the year 2015. It has been collaborating in conducting campaigns and also training the Resource Persons and the waste collectors. NGOs are also involved in handling the recyclables under the supervision of ITC.

GWMC and ITC together conducted several awareness programmes in schools, colleges, localities, corporate and industries and door-to-door campaigns.

For door-to-door collection, earlier one push cart was used to collect waste from 500-600 households and it was reduced to 200-250 households. Each household was given a HDPE bag for storing dry waste. Sanitation workers were using push carts, and used to collect the dry and wet waste separately from the households. Wet waste, which is taken to a Resource Park, is converted into manure through the process of vermi-composting. GWMC also established Bio-methanization plants and generating power from the solid waste and it is being used to light the administrative office.

- As a result, 100% door-to-door collection and 70% segregation of dry and wet waste at source. Source segregation has helped in reducing the volume of solid waste that went into landfills, which needed vast spaces.

- Energy is being produced from other solid waste through methanization

- It also helped in improving the working conditions of about 2500 sanitation workers and provided them an additional income through selling of dry waste they collected.

- A value chain has been created with the intervention of ITC, by establishing a recycling park increasing sustainability of the process.

GWMC’s Solid Waste Management Initiative is highly sustainable as it is being implemented without any additional burden on the Urban Local Body. It can also be replicated easily.

**JAMNAGAR MUNICIPAL CORPORATION, JAMNAGAR**

**Construction of 70 M.L.D. Sewage Treatment Plan**

Due to rapid growth of heavy industries and surrounding areas of Jamnagar city, the commercial activities has also increased many times, thus added additional burden on the existing infrastructure which was already provided by Jamnagar Municipal Corporation (JMC). The present area of JMC limits since last year was around 35 Sq. kms with population of 6 lakhs had now increased to 135 Sq. kms. The entire sewage of the city is being discharged into Nagmati and Rangmati rivers & ultimately, into the Sea (Gulf
of Kutch) nearby Jamnagar city; which had seriously affected the marine and other biological life. Due to which, the City had been affected on health aspects and also resulting in the environmental degradation of river.

So with a vision of providing Sewerage system for the entire city (35Sq kms) JMC had initiated the project under World Bank funded Integrated Coastal Zone management project for providing Sewerage System for around 9 Sq. Kms of area. The system has been commissioned and the STP plant would be put into operation by March 2016. JMC thus had fulfilled the vision of providing sewer collection system for entire Jamnagar city (80% of area) by year 2015, thus creating a hygienic, healthy environment within City.

The above project components are completed, thus fulfilling the objectives of the project. JMC at present is implementing Sewage collecting works in various zones. 70 MLD of Present water supply to Industries (Reliance/Essar) would be reduced (Indirect Benefit to Society). 70 MLD of Water supply from Narmada can be utilized to way ward villages in Saurashtra region. Considerable Energy Savings due to reduced Pumping cost of water to industries. Being a unique one, the entire STP project was conceived with Zero discharge concept, with emphasizes on re-use and sustained O & M of the plant. JMC is executing this project under Government of India/State Government of Gujarat grant funds, but for sustainable operation, JMC would funds from Sewerage taxes collected along with receipt of premium thru sale of treated waste water by the Operator.

By providing a covered secondary collection point (SCP) of MSW collected from certain wards of the city Municipal Corporation Jalandhar have been able to achieve the following

100 % door to door collection from the households, Segregation at primary stage by the door to door collection workers, while collecting from the households, Secondary segregation by the rag pickers at secondary collection point. By providing the concrete platform for the secondary segregation, The loading, unloading and segregation in Municipal vehicles happen behind screens are not visible to public.
Municipal Corporation, Jalandhar spent Rs 8.00 lacs (approx) to upgrade the Secondary Collection Point at Partap Bagh.

**Bad dump secondary collection point**

- Key hurdles in beginning include the resistance by the people of surrounding locality for construction of SCP and pressure for shifting it to another location.
- Other key challenges include Leachate flowing towards adjoining residential and commercial areas, & nearby no alternate land available for SCP.
- Time schedule is strictly monitored by supervisors at SCP at Partap bagh. They have to maintain time schedule register which is checked by higher authorities’ right upto dumping of MSW at dumpsite.
- The strict monitoring helps in maintain of SCP in proper hygienic condition throughout the day. Although MC Jalandhar has proposed the installation GPS system its Primary collection Vehicles like Tata Ace.

As a result, 100 % door to door collection with segregation of MSW at both primary level and secondary collection level.

- Before construction of new SCP there was no platform existing which used to result in leachate keeping the MSW wet, the wetness of MSW used to result in enhancing the rate of biodegradation of MSW during its temporary storage at SCP.
- The construction and upgradation of SCP has solved this problem of foul smell as the leachate has now been collected and diverted into the sewerage system from it.
- Now no discharge of untreated leachate/wastewater to soil or nearby surface water body or in open is being found.
- Construction of boundary wall and fixing of view cutters has further improved the scenario as MSW is not visible to passerby.
- It has also resulted in blocking the entry of stray animals like cow’s and dogs at SCP.
- Segregation of MSW by rag pickers also provides them livelihood. It further promotes recycling industry as the recyclable products are sold to junk dealers by rag pickers.
- Deployment of two sanitary supervisors permanently at SCP helps in maintaining the SCP in proper hygienic conditions and helps in monitoring.

A site was selected in the heart of the city which was used to dump the garbage, approximately 150 tipplers were lifted from the place and it was made totally garbage free.

**ITC LIMITED PSPD, TELANGANA**

**WOW-Wellbeing Out of Waste**

ITC’s WOW - Wellbeing out of Waste, is a Corporate Social Responsibility initiative and its vision is to change the attitude of the people towards garbage disposal by educating and creating awareness. The initiative is aimed at creating a healthy environment and also to retrieve and recycle valuable resources. WOW initiative is being implemented in six towns of Telangana and Warangal, Bengaluru and Coimbatore. Before the implementation of the WOW initiative, dry and wet waste was disposed together and valuable resources went into landfills. Their initiative helped in retrieving and recycling the valuable resources and also helped the waste collectors earn an additional income.

The implementation of the WOW Initiative had initial setbacks as people did not practice source segregation. Their Resource Persons repeatedly visited the households to pursue people to practice source segregation. ITC recruited Propagation Teams and Operation Teams, trained them and also the waste collectors. Their Resource Persons conducted door-to-door campaigns in a systematic and planned way using ICE materials. ITC distributed bags among households to store dry waste separately and also provided PPE materials (gloves, masks, etc.) to the waste collectors. ITC offered incentives to households, corporate, government and educational institutions and has also taken steps to inculcate the habit of source segregation among
the people. ITC ensured that the Municipalities took up the responsibility of transporting the dry recyclables by using their tractors from small storage points to DRCCs and the NGOs further processed the dry recyclables like paper, plastic, metal and glass for recycling.

The WOW Initiative is covering around five lakh households in South India and it is covering a total of 1,80,000 households in Telangana and the number is growing fast. The initiative has brought a tremendous positive impact on creating a clean and healthy environment and providing healthy working conditions to the waste collectors too.

The WOW Initiative is being successfully implemented for the past eight years and now it is being implemented in other areas too.

The WOW Initiative is being successfully implemented in four cities and six towns in South India.

**KAGAL MUNICIPAL COUNCIL**

**Journey towards Being Smart City-Zero Waste from Waste to Energy**

Today the population of Kagal city is 34095. There are 8335 property holders living in the city which is creating 8.27 ton garbage per day (300 gm garbage per family). Garbage collection, separation, transportation and process like work are going on by help of Rickshaw, Ghantagadi, Tractor Trolley and Compactor. In this project, the participation of women, young groups from slum areas, private educational institutional and students was taken. Initially, response from people was less, but later citizen from areas like slum colonies made a change under the campaign of “Swatch Maharashtra Abhiyan”. Door to door collection, Segregation of wet & dry garbage was stimulated. Each family was provided 2 buckets for this project as well as local mandals and groups were encouraged for tree plantation programmes, sanitation material under this “Swachhata Muhim”.

Kagal municipality achieved objective of 100% collection of garbage and segregation at source. Finally, proportion of garbage which was getting collected at waste depot, get decreased. Under the project, electricity generation from garbage became consistent resulting in making a dream come true of zero waste.

Municipal win award and an amount of 3 Lakhs in the year 2005-06, 5 lakhs in 2008-09 at the divisional award and 30 Lakhs in 2008-09 as a well as A + certificate was given by the government for keeping consistency in cleanliness. All citizens from slum area came forward to participate in this cleanliness campaign and realized its importance.

From bottom to the top, if all sector & people came together in the cause of social up liftment like cleanliness campaign, we can definitely lead to become smart city.

**DHIRUBHAI AMBANI INSTITUTE OF INFORMATION & TECHNOLOGY (DA – IICT), GANDHINAGAR**

**Solid Waste Management by Vermi-composting at DAIICT**

Since the campus premises covered by the more than 65% green vegetation, it was necessary to set up the proper disposal system for the huge generated dry/agro waste. The best feasible solution for the disposal of the dry/agro waste for system in scientific way was to set up a vermin compost plant in campus premises itself. The campus premise is spread in 50 acres and consists of 1800 persons. The vermi
The compost plant will not only give the healthy fertilizer to the land but also keep the campus green in organic way. The vermi-compost sites were decided in such a way so that water and electricity supply is easily available to facilitate the plant. Moreover, the site location is also required the shade, high humidity and moderate temperature which have been taken care of. The ideal location for the setting up the vermi compost plant was near STP Plant. The bed preparation involves the activities like Collection of wastes, Separation and storage of organic wastes. Predigesting of organic waste for twenty days, Preparation of earthworm bed, Watering all the beds periodically. At the end of the digestion process, the compost materials were sieved to separate the fully composted materials. The basic structure was created with the help of bamboo and green cloth. To protect from bird hazard, the entire site was covered with the bird net.

All beds are generating good amount of quality and quantity vermi compost fertilizer and which is being used at campus garden area to keep it lush green.

"Castings" final product of vermicompost

The knowledge of vermicomposting can be easily transferred to some new location.

Campus produces huge quantity of horticulture waste as well as kitchen waste. For proper utilization of above waste and to generate organic fertilizer, Vermi-compost site on trial basis has been established. After successful result of first site, two additional sites were developed.

DHIRUBHAI AMBANI INSTITUTE OF INFORMATION & TECHNOLOGY (DA – IICT), GANDHINAGAR

Sewage Treatment Plant at DAIICT

The campus accommodates approximately 1800 persons per day and approximately 4 Lakh litre of waste water is discharged in drainage everyday. So it was necessary to set up the proper waste water treatment plant for the huge quantity of waste water generated daily. The best feasible solution was sewage treatment plant in campus premises. DA-IICT established Sewage Treatment Plant in 2003 for the following reasons:

To recycle and reuse the treated waste water for gardens and fountain for planting purpose. This will also minimize the environmental and health impacts of the sewage. And treating waste water has the aim to produce an effluent that will do as little harm as possible when discharged to the surrounding environment, thereby preventing pollution compared to releasing untreated waste water into the environment. Up to 2011, the operation was entrusted to an outsourcing agency. From 2013 in house technical team is taking care of the operational part. The entire process is being monitored by the Estate/Administration of DAIICT team on daily basis.

The cost incurred on human resource and equipment for the operation of the said plants is approximately INR 2,00,000/- per annum.

Sewage treatment at DA-IICT involves three stages:

1. **Primary treatment:**

   It consists of temporarily holding the sewage in a mule tank where heavy solids can settle to the bottom while oil, grease and lighter solids float to the surface. The settled and floating materials are removed and the remaining liquid may be discharged or subjected to secondary treatment.

2. **Secondary Treatment**

   Secondary treatment requires a separation process to remove the micro-organisms from the treated water prior to discharge for tertiary treatment. The pre-settle tank is to clean the water and take out the sludge from water and move to further process of cleaning it.

3. **Tertiary Treatment**

   The water comes in main canal and distributed equally into 9 reed beds. After primary filtration from the beds the water is collected in treated water tank (underground). Finally the treated water is pumped for sprinkler irrigation through sand filter and screen filter.
Ground water, surface water sources is safe from pollution due to treatment of waste water. And treated water is used for irrigation. So there is huge saving in Extra Water. Recycling of water is being done. Cost of transportation of polluted water is saved.

The plant is running smoothly without any major problems. The technology is transferrable to any location of interest. By recycling and reusing the sewage water in horticulture area we could save natural water in huge quantity as well as electric energy.

Siddipet Municipality is having 36.03 sq.kms area comprising population of 1,38,690 and having 37,765 No of households. For implementation of MSW Rules 2000, Siddipet Mun took appropriate steps by deploying the required sanitation staff and planned pin point programme among the sanitation staff. the Siddipet Municipality utilized the optimum services of Mahila groups, NGOs, made wide propaganda among the town people to brought the best awareness. Also Conducted meetings periodically with the categorized professionals such as business men, schools, colleges, Mahila groups and penetrate the pinpoint observation of sanitations maintenance into the minds of resident public.

Municipality started Door to Door garbage collection of houses, commercial establishments. All out efforts were made like disbursement of bags to each house. Plastic baskets to keep the wet and dry garbage separately to each house. Also imparted trainings in depicted process to the Sanitation staff, Resource persons and resident in the selected colonies likewise brought awareness in systematic manner. Municipality provided walky talkies from Sanitary Inspector to all the Jawans working in the field to interact with the one another.

Provided one segregation hub and selected disposal of collected garbage in two ways, one is biologically manufacturing of vermin compost and 2nd is handing over the dry waste to M/s Shalivahana Ltd. and ITC Ltd, thereon for the production of power and recycling process for manufacturing of other materials. In this way Municipality is utilizing the waste for multiple advantages to the possible extent.

After implementation of SWM Rules-2000 by utilizing aforesaid techniques the face value of the town has been changed completely and achieved 100% result. The communities like commercial, residential have been benefitted a lot and healthy environments have been created in the town.

The culmination of best Sanitation has resulted good hygienic environmental conditions, controlled epidemic diseases born through dirty environments.
WEST BENGAL HOUSING INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED

Senior’s Park

The senior park is located in action area i at new town Kolkata. It is developed by west Bengal housing infrastructure development corporation (WBHIDCO). At present New Town have about 1 lakh population, of which significant members are elder person, perhaps their children living away from Kolkata. New Town authority has given a special attention to the senior citizen of his own and developed the Senior Park on 3.37 acres of land, adjoining the main access road of New Town. The programs include interactive sessions, seminars; health-related awareness drives etc. Under this system, the senior citizens would be provided with a ‘Smart Watch’ for a monthly fee, which would send distress message to the WBHIDCO Control Room for the Authorities to take immediate action.

The planning and design of the Senior Park had been done by in house architect with consultation with chairman of the organization. In the design process various groups participated. The citizen groups, elderly residents, specialist agencies, NGO, horticulturist and agriculturist were involved in the finalization of the concept of the Senior Park. The achievement is remarkable as membership is increasing every month. In the morning they come for jogging and in the evening they get busy with cultural events and indoor games. Most of the elder finds this place environmentally friendly where they can spend their time in peace.

AHMEDABAD MUNICIPAL CORPORATION

Urban Design and Transformation of Activity Nodes at Sabarmati Riverfront, Ahmedabad

Ahmedabad is located on the banks of Sabarmati River that serves as the city’s lifeline. It is a major source of water from the city due to regular release of water from Narmada Canal upstream. The waters of the river were used for sacred and socio-religious activities since centuries, and its banks were used for activities such as informal markets, washing, and recreation activities. The Sabarmati Riverfront Development Project is being implemented in the city as an urban design, urban renewal, ecological and environmental improvement project. This project aims to transform Ahmadabad’s historic yet neglected river into a vibrant and vital focus for the city along with widely landscaped parks and gardens, clean ghat, serene environment, clean water, diversion of sewerage, and improved conditions for urban poor resident on the riverbed. The Sabarmati River Front Development Corporation Ltd. (SRFDCL) is the Special Purpose Vehicle Company (SPV) wholly owned by Ahmedabad Municipal Corporation (AMC) created to implement the project. As part of the process for the Project the following steps were followed: Identification of activities such as heritage flea market based near the Ellis bridge, Washmen Wharf near Nehru Bridge, and events, exhibitions and informal activities. Surveys were conducted to gain information on the identified sites and activities in terms of number of users, size of business/purchase, physical layout of their activities, infrastructure requirements, practices and customary rights. Design that best reflected the needs of the users was drawn up.

The following results have been achieved on the physical projects: Creation of Permanent Infrastructure for 1200 vendors of the informal market, and 162 washer man of the Dhobi Ghat is complete. Around 80% Road Network is complete. As a result of the creation of informal market
It is possible to organize the market which was weekly earlier on daily basis. New employment opportunities have been created through additional vendors and ware sellers at informal market, flower garden and event ground.

This is one of the first such attempts in India where instead of livelihoods were protected through in-situ transformation of economic activities.

The project is freely replicable across other cities and sites of India. Whether part of riverfronts or not, economic nodes such as these require to be transformed and lessons learnt can be put into practice through proper planning, design and implementation and stakeholder involvement.

Earlier also we have awarded this entry in the year 2011-12.

**BAGALKOT TOWN DEVELOPMENT AUTHORITY**

**Shifting of Submerged Bagalkot Town and Developing as a Modern City and District Head Quarter**

Almatti Dam a part of U.K.P. is already constructed across Krishna river at Almatti village. The Dam is located immediately below the confluence of river Ghataprabha with river Krishna. Bagalkot Town is on the right bank of Ghataprabha River situated at a distance of about 40 Km., by road with South west of Almatti Dam. The lowest portion of the town is at an elevation of 512.19 m. (1680') the maximum elevation being at about 533.53 m (1750'). A substantial portion of this town will get submerged in the back waters of Almatti Reservoir when the dam is raised to its ultimate FRL at 524.256 m (1720'). The submerged portion of the city is being re-located and resettled in Stages in Navanaghr Bagalkot.

The structure of new Bagalkot town as per the master plan consist of 49 sectors each 280 x 280 m. comprising of a town centre, 4 Bazaar sectors 34 residential sectors and 11 sectors for parks & playground connected by a network of 30 m wide Boulevard, 24.00 m wide arterial roads, 18.00 m wide peripheral road, access roads and internal roads etc. Hence earlier plan for a township with rehabilitation centre has been changed into a development of a new district head quarter.

The public were reluctant to move to the new location. Lot of hurdles were faced in shifting. Many incentives and encouragement attitudes such as free transportation of household materials, free service connections, free basic civic amenities were declared.

It is planned to have one more unit of 50 sectors towards western end of the previous area to accommodate the PDF families lying between RL 521.00 to 523.00 m. This unit is called as Unit-II consists of 36 residential sectors, 6 sectors for garden & public amenities and 8 sectors for institutions, Government offices and relocating the shifting of utilities such as Electrical Sub-station etc., with an area of 1333 acres. The work of demarcation of sectors and demarcation of plots in Unit-II area has been completed. The sites are being allotted and basic infrastructures development works such as Roads, Storm Water Drains, Water Supply, UGD & Electrification works are under progress.

Another 1640 acres of land is required to shift about 3,584 families coming between RL. 523.00 m to 525.00 m. The area is being acquired. The layout plan is being prepared for Unit-III and programme has been drawn to complete this stage.
## Contact Details of Best Practice Award and Winning Entries

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# Team Members

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