



HUDCO BEST PRACTICES AWARD

to Improve the Living Environment



A Compilation of Award Winning Entries 2011-2019

About the Book

Best Practices - An Award by HUDCO to Improve Living Environment 2011-19 is a coffee table book, being published as a part of the golden jubilee celebration of HUDCO, documenting the award winning best practices over the years since inception of the award by HUDCO in the year 2011-12.

Various implementing bodies, both under government and private sectors, have been honoured by HUDCO through almost last one decade by giving away best practices awards in the field of habitat under seven different themes. This book ventures to record the unique contributions of the award winning organisations in their endeavours. Details of the projects undertaken in different parts of the country, which aimed at improving the living environments of human habitat, have been documented.

The book has been designed as an authentic documentary record-book which would depict the success storey to prospective partners in development of human settlements including policy makers, city managers, architects, planners, engineers etc. The description of each of such unique projects with pictorial presentations and data backups would definitely usher the path to successful implementation of similar initiatives in habitat sector by future generation of stakeholders.

HUDCO has come up with this priceless document with an aim to strengthen the arm of government of India in tackling the challenges of urbanisation by way of knowledge sharing.

DISCLAIMER :

The projects featured in this publication are the compilation of Award winning entries of HUDCO Best practices award 2011-19, and are selected by the awards jury based upon the information provide by the participating agencies for the awards, in form of write-ups and presentations. HUDCO does not take responsibility for the accuracy, technical soundness or completeness of the content of these entries and shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use or reliance on the contents of this publication.

The contents given in this publication are for general reference only and not intended to replace the need for professional advice in any particular area.

MESSAGE FROM MINISTER

हरदीप एस पुरी
HARDEEP S PURI



Message

आवासन और शहरी कार्य राज्य मंत्री (स्वतंत्र प्रभार)
नागर विमानन राज्य मंत्री (स्वतंत्र प्रभार)
वाणिज्य एवं उद्योग राज्य मंत्री
भारत सरकार
Minister of State (I/C), Housing & Urban Affairs
Minister of State (I/C), Civil Aviation
Minister of State, Commerce & Industry
Government of India

Our cities are hubs of economic productivity, infrastructure, culture, and diversity. As key drivers of economic growth, our cities needed to expand sustainably and inclusively. In 2014, India embarked on one of the most ambitious urbanization agendas in the world.

Through flagship schemes and missions of the Ministry of Housing and Urban Affairs like the Swachh Bharat Mission - Urban (SBM-U), Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Smart Cities Mission (SCM), and Pradhan Mantri Awas Yojana - Urban (PMAY-U), we have significantly improved access to essentials like sanitation, water, urban transport and sustainable housing to crores of Indians living in our urban centres.

The Covid-19 pandemic tested the technology deployed and citizen-led community networks we have established through our various programmatic interventions. The role 'Self Help Groups' established under the National Urban Livelihoods Mission and Integrated Command and Control Centres (ICCC) built under Smart Cities Mission has been integral in assisting cities in their fight against Covid-19.

I am pleased to know that HUDCO, on the occasion of its Golden Jubilee celebration this year, is releasing this coffee table book with the compilation of award-winning best practices that have emerged from our urbanization efforts. HUDCO should continue to recognize such contributions to attract young and enterprising urban actors into the fold of the growing Indian Urbanization story.

New Delhi
31 August 2020


(Hardeep S Puri)

Message from Secretary

दुर्गा शंकर मिश्र
सचिव
Durga Shanker Mishra
Secretary



भारत सरकार
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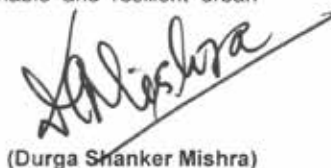
MESSAGE

Cities are engines of economic growth. They house major economic activities and contribute a large part of national revenue. Our country is currently witnessing rapid urbanization. Projections by expert agencies show that our urban population will grow over 50% when we get the results of 2051 census. In last six years the country has witnessed transformation and rejuvenation of urban landscape at such an unprecedented pace which has not happened anywhere across the globe in past so far.

In this process urban planning and innovative practices for development play very important role. The new habitat need to be inclusive, sustainable and climate resilient. It has to use new approaches for efficient utilization of resources and creating environment friendly aesthetic living conditions.

Human Settlement Management Institute (HSMI), the research and training arm of Housing and Urban Development Corporation Limited (HUDCO), a CPSE under the Ministry has been recognizing innovations in urban planning and implementation of projects related to habitat every year on HUDCO Foundation Day since 2011-12. This promotes competition and excellence in planning and practices for implementation.

I am happy to learn that this year being the Golden Jubilee year of HUDCO, HSMI is publishing a Coffee Table Book with collection of award winning entries of the past one decade. Such a publication will not only recognize contributors' creativity but also encourage Urban Planners / Managers to give their best to achieve sustainable and resilient urban development.



(Durga Shanker Mishra)

New Delhi
17th August, 2020

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FOREWORD



While urbanisation is an inevitable phenomenon impacting human habitat worldwide, the pace of urbanization is very fast in India. The population of urban India was 377 million according to 2011 census and expected to increase two-fold by the year 2035. This type of rapid growth of urban population would naturally transform our country from rural to urban nation soon. The Government of India has been facing a steep challenge in providing resources to the urban settlements in the form of infrastructure, energy and other related facilities, in addition to housing solutions. While extending these facilities to urban India, aspects like environmental protection, livelihood issues, environmental sustainability, etc. are to be given utmost importance for inclusive development. Therefore, the only way to deal with the situation is application of environment friendly, cost effective, self remunerative technologies in an innovative way. In this context, Government of India had launched two very important flagship programmes, namely Housing for All (Urban) – Pradhan Mantri Awas Yojana and Smart Cities Mission, in order to tackle the challenges of urbanization in India.

Housing and Urban Development Corporation Limited (HUDCO), being the subordinate CPSE of the Ministry of Housing and Urban Affairs, has been assisting the Ministry in all initiatives of Government of India, in the field of Habitat Management in the country for the last fifty years. As per the primary mandate of HUDCO, it has been extending loan assistance for various housing and urban development initiatives of the Government in a big way. Other areas where HUDCO has been providing support are for promotion of cost effective & environment friendly technologies, consultancy, capacity building, research and documentation, CSR etc. in the habitat settlements. HUDCO has also been working as a 'Think Tank' of the Ministry in formulating policies and guidelines for various Action Plan Schemes from time to time.

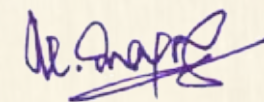
Human Settlement Management Institute (HSMI) was established in the year 1985 as the Research and Training Wing of HUDCO. Since then, HSMI has been involved in carrying out research activities including documentation as well as imparting trainings to the urban managers upto grass-root level, as capacity building measures, to deal with the challenges in formulation, implementation and maintenance of efficient housing and infrastructure projects. HSMI has also been organising capacity building programmes in the sector for international professionals very successfully, on behalf of the Ministry of External Affairs, under bilateral and multilateral funding programmes. Prestigious in-service programmes of Department of Personnel and Training (DoPT) are also being organised by HSMI to appraise the officials of All India services about various GoI Action Plan Schemes for effective implementation of the same in various States.

HUDCO Award for Best Practices to Improve the Living Conditions was instituted in the year 2011-12 and HSMI has been coordinating this activity. Entries are invited through the network of HUDCO Regional Offices at State level from Government as well as private stakeholders under seven categories viz. (i) Environment Management, Energy Conservation & Green Building; (ii) Urban Transport; (iii) Disaster Preparedness, Mitigation & Rehabilitation; (iv) Housing, Urban Poverty & Infrastructure; (v) Sanitation; (vi) Urban Design & Regional Planning, Inner City Revitalization & Conservation; and (vii) Urban Governance. These Awards are selected through Expert Committees constituted with eminent professionals in the field who has been evaluating entries from various stakeholders. A compendium of award winning entries is published by HSMI annually, by compiling details of such entries. The awards for the concluded financial year are presented during the subsequent HUDCO foundation day in April and the compendium for the year previous to the same is released in the function.

As a regular annual assignment, HSMI has received entries under HUDCO Award for best practices for the year 2019-20. This year being the Golden Jubilee Year of HUDCO, a special issue of compilation of all the award winning best practices since introduction of HUDCO Best Practices Award in 2011-12 has been published in the shape of a Coffee Table Book.

This initiative is aimed at bringing together the best practices in habitat management sector by various government and private enterprises for the last almost one decade, in different parts of the country. I am optimistic that the coffee table book would be regarded as a reference document to disseminate the valuable information on technological knowhow in successful implementation of more innovative projects in the urban development sector.

In the context of smart cities, Hon'ble Prime Minister of India opined that a bottom-up approach would be followed where the onus would be on local bodies rather than states or the Centre to develop them. In view of that, the publication would work as a knowledge sharing tool for stakeholders at field level in effective implementation of habitat related schemes, with a broader perspective of making HUDCO stronger in tackling the challenges of urbanization efficiently, in our own way.



M Nagaraj

Chairman & Managing Director, HUDCO

New Delhi
16th August, 2020

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 HSMI's request for submission of entries for consideration of Award over the years since 2011-12. 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 supports 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.

The Expert Committees of the eminent professionals have devoted valuable time in evaluating the entries. We would like to express our sincere gratitude for their guidance and patience.

We highly acknowledge the guidance and encouragement given by the leaders of HUDCO to HSMI team and deeply cherish the enthusiasm and support from the CMD, DCP and other senior officials of HUDCO given to us in carrying out this activity from selecting the award winning entries till documentation for wider dissemination of knowledge and information. Further, whole hearted support and valuable inputs provided by present CMD, HUDCO in the HSMI's endeavor of publication of Coffee Table Book on Best Practices to improve the living environment of Urban Habitat, which would document best practices since introduction of HUDCO award in the year 2011-12 till 2018-19, is also acknowledged.

HSMI team led by Dr. Sukanya Ghosh, Senior Fellow with the help of Ms. Vijaya R Vasu, Fellow has made commendable efforts in compiling best practices entries for last decade to come up with a very valuable document in shape of the Coffee Table Book.

A blue ink signature of Dr. S.K. Gupta, written in a cursive style.

Dr. S.K. Gupta

Executive Director (Training), HSMI

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ABOUT THE HUDCO AWARDS FOR BEST PRACTICES

In order to promote and propagate best practices, HUDCO has initiated “HUDCO Award for Best Practices to Improve the Living Environment” in the year 2011-12 to encourage efforts in the areas of housing and urban development and to motivate Government Departments/ Parastatals Agencies/Local Bodies/Authorities/NGO's/Private and Corporate Sector/ Research and Academic Institutions etc. who have demonstrated outstanding initiatives to encourage innovative and sustainable projects. HUDCO gives award under the following 7 themes:-

1. Environment Management, Energy Conservation and Green Building
2. Urban Transport
3. Disaster Preparedness, Mitigation and Rehabilitation
4. Housing, Urban Poverty and Infrastructure
5. Sanitation
6. Urban Design & Regional Planning, Inner City Revitalization & Conservation
7. Urban Governance

Each Theme has the following sub-themes:

THEME 1- ENVIRONMENTAL MANAGEMENT, ENERGY CONSERVATION & GREEN BUILDING

Sub-theme: Innovative pollution reduction measures at city level, Urban greening, Application of Environmentally friendly technologies at city/building level, Integrated assessment, monitoring and control, and “Green” accounting, Tangible measures for ecological sustainability at city/zone level, Energy conservation practices at building/city level, Appropriate and cost effective building materials and construction technology, Green buildings and Green building indicators & water conservation measures/Rain water harvesting at City/building level.

Theme 2- URBAN TRANSPORT

Sub-themes: Mass public transport, Environmentally friendly public transport, Traffic bottleneck reduction planning, GPS based initiatives for transport improvement, Urban transport planning, Parking solutions, Transit Oriented Development/Transit Corridor development & Last Mile connectivity.

THEME 3-DISASTER PREPAREDNESS, MITIGATION & REHABILITATION

Sub-themes: Reduction of vulnerability, Civic awareness and preparedness. Contingency planning and early warning systems. Response capacity, Hazard and risk reduction and mitigation, Post disaster rehabilitation/reconstruction, Risk assessment and zoning, Gender specific risks and needs, Building bye-laws for disaster mitigation.

The selection criteria are based on Planning and Implementation Processes, Innovativeness, Stakeholder's Participation, Resource Mobilisation and Impact, Sustainability and Applicability.

THEME 4- HOUSING, URBAN POVERTY & INFRASTRUCTURE

Sub-themes: Affordable housing, Access to housing ,Access to housing finance/credit, Slum and settlement upgrading and improvement, Application of environment friendly building materials, Cost effective urban housing including innovative, emerging and disaster resistant technologies in housing, Access to land/services for urban poor, Provision of basic services, Public-Private partnerships/Public-Private-Community partnerships & Community based capacity building/livelihood generation solutions.

THEME 5-SANITATION

Sub-themes: Solid Waste Management, Sewerage management, Cost effective/eco-friendly/Innovative sanitation solutions & Waste to energy solutions.

THEME 6-URBAN DESIGN & REGIONAL PLANNING, INNERCITY REVITALIZATION & CONSERVATION

Sub-themes: Smart City solutions, Sustainable/inclusive city planning, Innovative Urban design/New township designs, Innovative regional planning approaches, Urban renewal/Heritage conservation or retrofitting, Inner city renewal/revitalization & Accessibility improvement for differently abled/vulnerable groups.

THEME 7- URBAN GOVERNANCE

Sub-themes: Urban management and administration, E-governance/M-governance, Partnerships with civil society, Participatory budgeting and decision making, Human Resources and leadership development, Decentralization/Devolution of powers, Institutional reform, Transparency and accountability, Empowerment of Women, Innovative methods of collection of property tax/other taxes/bills, Municipal double entry pure accrual accounting & Improved service delivery initiatives.

Promotion of best practices in the above themes will stimulate action in critically important areas in fulfilling the Sustainable Development Goals (SDGs) declared by United Nations in its General Assembly 2015, which India is committed to achieve by 2030.

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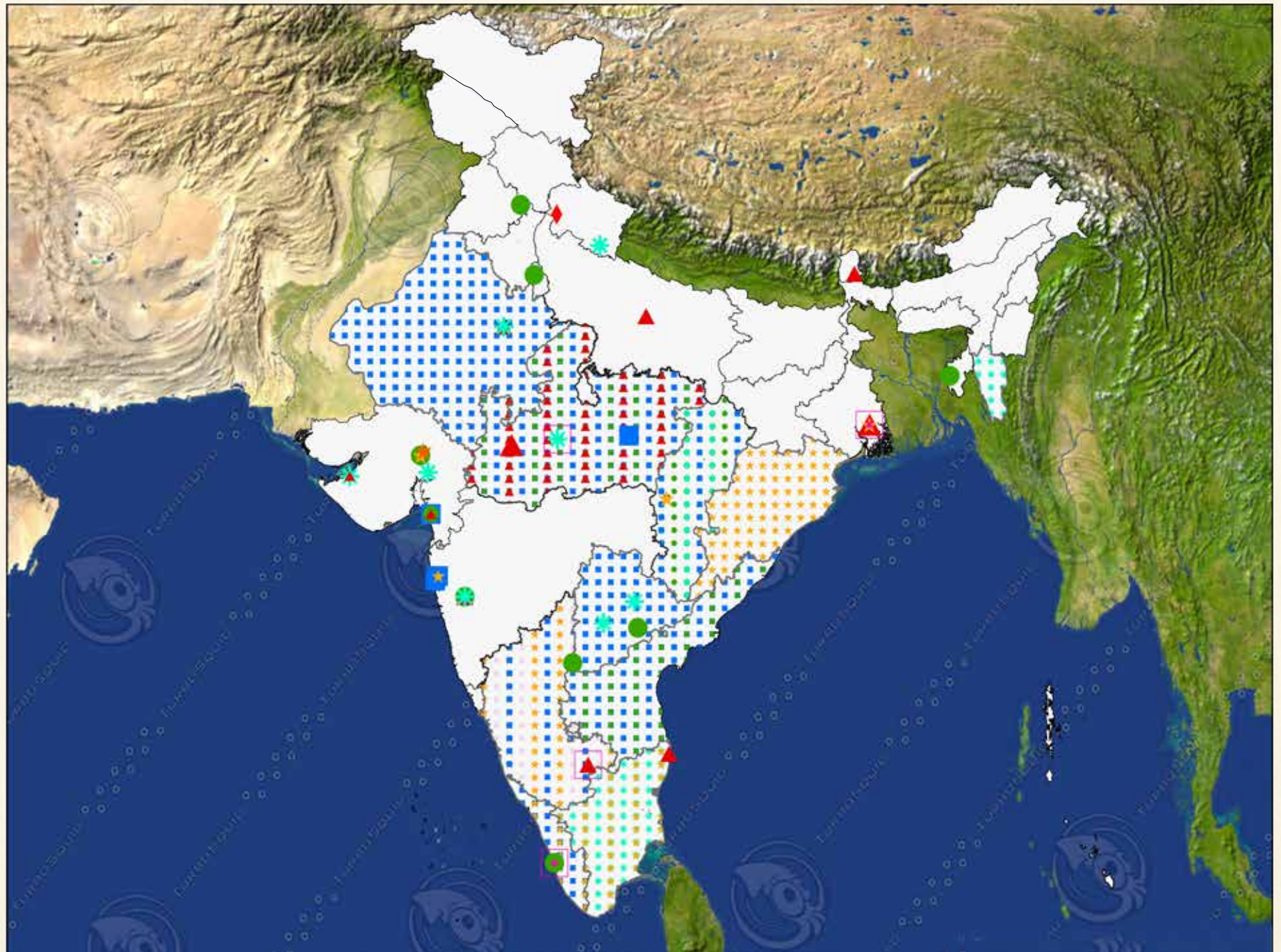
	Year	Title of Best Practices	Winning Agency	State	Page No.
Environmental Management, Energy Conservation and Green Buildings	2018-19	Energy Security Efforts	Surat Municipal Corporation	Gujarat	18
		Revitalization of Derelict Urban Spaces- Chhakarpur – Wazirabad Bundh	VSPB Associates, I AM GURGAON, Haryana Forest Department	Haryana	22
	2017-18	HERMA-An Example of Sustainable Habitat	NB Institute for Rural Technology	Tripura	28
		Pune Street Lightening Project under PPP Model	Pune Municipal Corporation	Maharashtra	28
		Urban Greening Initiatives #	Andhra Pradesh Urban Greening & Beautification Corporation	Andhra Pradesh	28
	2016-17	Initiatives of World's First Airport Fully Powered by Solar Energy	Cochin International Airport Limited	Kerala	28
	2015-16	Construction of Green Building: Head Quarter of Navi Mumbai Municipal Corporation	Navi Mumbai Municipal Corporation	Maharashtra	29
		Promoting Fly Ash Utilization Technologies for Sustainable Construction, Raichur	Cashutec Building Centre, Raichur	Karnataka	30
	2014-15	Rejuvenation of Water Resources – Rain Water Harvesting	Maharajpur Nagar Parishad	Madhya Pradesh	30
	2013-14	Green Building Construction	Haryana Police Housing Corporation	Haryana	31
		Rain Water Harvesting in Gautumpura and Integrated Urban Sanitation Programme	Urban Administration and Development Department	Madhya Pradesh	31
	2012-13	Use of Passive Technologies for Energy Conservation	Chhattisgarh State Renewable Energy Development Agency (CREDA) & Chhatisgarh Housing Board	Chhattisgarh	32
		Design, Construction and O&M Arrangements of the Forest Complex, SAS Nagar, Mohali	Department of Forest & Wildlife Preservation	Punjab	33
	2011-12	Improving the Cities Living Environment in the City	Suryapet Municipality	Andhra Pradesh	33
		Kankaria Lake Redevelopment	Ahmedabad Municipal Corporation	Gujarat	34
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	2017-18	Seamless Transport	Kochi Metro Rail Ltd.	Kerala	46
		Introduction and Running Bi-Cycling Sharing System in New Town, Kolkata	New Town Kolkata Development Authority	West Bengal	46
	2016-17	Mitra-Initiatives in Intelligent Transport System at Mysuru	Karnataka State Road Transport Corporation	Karnataka	46
	2015-16	GPS Based Initiatives for Transport Improvement	Bangalore Metropolitan Transport Corporation	Karnataka	47-48
		Parking Solutions			
	2014-15	Ahmedabad Bus Rapid Transit System – ‘JANMARG’	Ahmedabad Janmarg Limited	Gujarat	48-49
		Urban Transport Planning ‘Sitalink’	Surat Municipal Corporation		
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	2012-13	Ahmednagar City Transport Service	Ahmednagar Municipal Corporation	Maharashtra	51
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	2014-15	Early Warning System	Meteorological Centre, Dehradun	Uttarakhand	54

	Year	Title of Best Practices	Winning Agency	State	Page No.
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		Universal Coverage of Urban Piped Water Supply	Housing and Urban Development Department, Govt. of Odisha	Odisha	62
	2017-18	Janaadhar Mangala - Integrated Township under PPP Model with a Focus on Affordable Housing at GIFT City	Janaadhar (India) Private Limited	Gujarat	68
		Direct Benefit Transfer – Online Payment System for BLC under PMAY #	Housing & Urban Development Department, Govt. of Odisha	Odisha	69
		Urban Resource Centre #	Saath Charitable Trust	Gujarat	69
		Land Rights to Slum Dwellers in Urban Areas of Odisha #	Housing & Urban Development Department, Govt. of Odisha	Odisha	70
	2016-17	Initiatives in Financial Inclusion of Urban Poor Women through Linkages with Income Generation Activities	Surat Municipal Corporation	Gujarat	71
		Financial Upliftment of Urban Poor Women by Engaging them in Traditional Cotton Textile Handloom Industries	Municipal Corporation Rajnandgaon	Chhattisgarh	71
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	2013-14	Pro-Poor Activities through Micro Enterprise Support, Skill Training and Community Mobilization	Municipal Administration, Govt. of Tamil Nadu	Tamil Nadu	75
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		One Home One Toilet Programme	Pune Municipal Corporation and Shelter Associates, Pune	Maharashtra	99

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Certificate of Appreciation

SPREAD OF BEST PRACTICES AWARDS OF HUDCO 2011-2019



250 125 0 250 500 750 1,000
Kilometers

Legend

- Environment
- ★ Urban Transport
- ▲ Urban Design
- Housing
- ✱ Sanitation
- Urban Governance
- ◆ Disaster





ENVIRONMENTAL MANAGEMENT, ENERGY CONSERVATION AND GREEN BUILDING

2018-2019



YEAR 2018-19

ENERGY SECURITY EFFORTS by Surat Municipal Corporation

Surat Municipal Corporation (SMC) in line with the smart city mission, decided to undertake the project of energy conservation by meeting 10 per cent of its total energy requirement through solar energy. SMC also focused on reducing its water supply system's electricity consumption by using renewable sources of energy. Therefore, solar revolution under SMC kick-started with the launch of solar roof top programme in September 22, 2016. With the motive of reduction of carbon footprint by conservation of electrical energy and by reducing the usage of conventional fuel/ energy, usages, SMC implemented various Energy Efficiency (EE) measures in Water Supply System which have rendered 109.80 GWH per annum. This implies reduction of equivalent CO₂ emission by 92,230 tonnes of CO2 per annum. Till date, all the energy savings realized through Energy Efficiency and Renewable Energy measures for the whole of SMC have rendered 116.25 GWH per annum.

Introduction

Surat City was declared as a ‘Solar City’ in 2011 by Ministry of New and Renewable Energy (MNRE) and being the model solar city it has been promoting solar energy and energy efficiency projects since 2013-14, even before it made it to the Smart Cities list in the year 2016. One of the key requirements as a **Smart City was to meet 10 per cent of its energy requirements through solar energy.** The Surat Municipal Corporation therefore decided to undertake the project. It was estimated that of the rooftop potential of 11,924 mega watt (MW) to be distributed among various smart cities of the country, nearly 418 MW or 3.5 per cent existed in Surat. The solar revolution under SMC kick-started with the launch of solar rooftop programme in September 22, 2016, and a website was launched to create awareness on grid connected rooftop (GCRT) system. SMC successfully achieved a massive GCRT installed capacity of 3.67 megawatt peak (MWp) on various government buildings.

Apart from the above initiative, it was also observed that more than half of the electricity consumed by entire Surat Municipal Corporation used to go in the Water supply system's electricity consumption, even after taking various energy conservation measures. Therefore, to keep motive of reduction of carbon footprint with conservation of electrical energy and thus reducing conventional fuel/ energy sources usages, SMC implemented various Energy Efficiency (EE) measures in Water Supply System which have rendered 109.80 GWH per annum. This implies reduction of equivalent CO2 emission by 92,230 tonnes of CO2 per annum.



Althan water distribution station (with solar panels installed) in Surat

Background

Water supply system's electricity consumption is more than half of the electricity consumed by entire Surat Municipal Corporation even after taking various energy conservation measures. After detailed study, it was concluded that running water treatment plants on Natural Gas Based Power Plant does not become feasible due to lower plant load factor (~40%). In the effort of making the Corporation's water supply service economical, sustainable and renewable energy based installation of wind power plant was taken up and other appropriate energy efficiency measures were also considered for the Water Supply system.

Situation before the initiative (Prior to 2003-04): In 1996, Surat Municipal Corporation was supplying around 200 MLD of water to the entire Surat City. Population of Surat city increased from 14.93 lacs in 1991 to 24.33 lacs in 2001, leading to a substantial increase in the water demand. From 1996-97 to 2003-04, water demand doubled from 199 MLD to 479 MLD and energy bill increased from Rs. 8.29 Crores in 1996-97 to Rs. 26.40 Crores in 2003-04. Water Supply System being the major component in the energy consumption and contributing more than 61% of total energy bill of SMC, the total energy bill also increased from Rs. 12.66 Crores (1996-97) to Rs. 43.18 Crores in 2003-04.

Water supply and electricity bills

Financial Year	Average Water Supply (MLD)	Electricity Bill for Water Supply (Crore Rs.)	Electricity Bill for Other Services etc. (Crore Rs.)	Electricity Bill of SMC (Crore Rs.)	% of Water Supply
1996-97	199	8.29	4.37	12.66	65.48%
2003-04	479	26.40	16.78	43.18	61.14%
% Rise	140.70%	218.46%	283.98%	241.07%	-----

As the size of the water supply system increased immensely, dedicated focus was also not possible by the engineers involved in projects and operation & maintenance works of water supply system. Considering the above situation a dedicated "Energy Efficiency Cell" was established in the Year 2001.

Key dates

The energy efficiency measures started by SMC in the year 1997 with the commissioning of 240 MLD WTP at Katargam Water Works. Similar projects were also initiated at Sarthana and Rander Water Works and the same were carried out till the year 2009. With installation of 3 MW wind power plant in 2010 at Adodar in district Porbandar, Surat Municipal Corporation became the first Urban Local Body in India to achieve such a landmark. Surat City was declared as a ‘Solar City’ by MNRE in the year 2011 and master plan got approved in Sep-2013. Under ‘Solar City’ Master Plan, installation of 21 MW capacity Wind Power



Wind power plant installed in Surat

Plants were planned till 2016-17, carrying out similar works till April 2018. Moreover, SMC also placed a work order of another 1 MW solar power plants which was planned to be commissioned in January 2019.

Main focus

The main focus of SMC was to achieve the set target of fulfilling 10 % of the total energy requirement of Surat city through solar energy and also reducing the water supply electricity consumption bill. Therefore, in order to achieve the set target, a dedicated "Energy Efficiency Cell" was formed focusing on the importance of energy conservation in Water Supply System and other services. The Energy Efficiency Cell had the following objectives:

- To identify and implement energy conservation projects and find out sources of procuring power at lowest possible price.
- To conduct in house and external energy audit along with feasibility study for power generation from conventional and nonconventional energy sources.
- To represent Corporation in Electricity Regulatory Commission (GERC) for availing electrical energy at economical rates.
- To monitor the usages of electricity of entire Municipal Corporation of Surat.

Establishment of priorities

- To set up a dedicated energy efficiency cell to identify the inefficient operations of the machineries or the processes and to carry out relevant replacement and modification works in order to achieve energy conservation.
- To study in-house Energy Audit and External Energy Audit through Government approved Energy Auditor.
- To reduce the energy consumption bill of Surat Municipal Corporation, by implementing various energy conservation projects.
- To reduce the huge share of water supply electricity consumption by substituting it with renewable energy sources and also finding out sources of procuring power at lowest possible price.

Mobilization of resources

Financial: The funding of the whole project was carried out under the State Government project fund related to the promotion and use of renewable energy measures to reduce the energy consumption. The financial profile of the whole project is provided in the table below:

Financial profile of the project

Organization	Year 2015-16	Year 2016-17	Year 2017-18	Year 2018-19	Total
State government funds (Rs. Cr.)	5.4	90.06	18.39	17.97	131.82

Institutional: Under 'Solar city' program, SMC has formulated 'Solar city Cell' and 'Solar Stake Holder Committee' which involves the various industries like Katargam GIDC, Pandesara GIDC etc. , various educational institutes like NIT, SCET and various associations like Southern Gujarat Chamber of Commerce and Industry (SGCCI), Diamond Association, Textile Association, Builder Association etc.

Process

Challenges faced before deployment of the project:

1. Solar Power Plant:

Lesser Renewable power purchase obligation: State solar power purchase obligation was quite less in solar power plant, hence SMC couldn't approach DGVCL to purchase power from their solar power plants. Hence, they had limited option to install solar power plants in the licensed areas only.

High capital cost: Comparatively, solar power plants have high capital cost and hence it was not viable to use solar power for captive consumption.

Availability of roofs in Torrent Power's licensed area: Already on 37 locations, solar power plants were installed, now there was no roof available in the Torrent's license area to install more solar power plants.

2. Wind Power Plant:

Inclusion of Consumers: Initiation on installing wind power project was done in the year 2004 and primary feasibility study for use of wind power for HT services of SMC was carried out. It was found out that if wheeling and banking facilities given to industrial consumers is made available to SMC, installation of wind power becomes economically feasible. After assessing the performance and considering energy usage charges of HT connections (services) at that time, it was concluded that wind power

is technically viable. SMC had made submission before Gujarat Electricity Regulatory Commission (GERC) in 2006 for giving benefits of wheeling & banking of electricity for HT services of SMC and also to permit wheeling of energy at more than two locations. In reference to submission made by SMC, GERC had given permission of wheeling and banking of electricity to non-industrial units set up after 20-Jun-2007.

Process followed during implementation of the project is as follows:

- 1. **Solar Power Plant:** Site feasibility studies were carried out with reference to the open and shadow free roof availability, south facing for solar module and roof stability. Preparation of techno commercial proposal and in-principle sanction from management took place along with calculations involving IRR and pay-back period. A consultant was appointed for preparation of documents for seeking subsidy from MNRE. Tender document was prepared and consent was taken from MNRE, Government of India, for floating tender document. After issuing work order to the selected consultant, project work started that involved material testing, site inspection, erection and commissioning. An online monitoring of plants was carried out along with quarterly maintenance.
- 2. **Wind Power Plant:** There were lot of challenges & issues to bring about solution of installing wind power plant successfully and usage of electrical energy generated at maximum benefits availed as per prevailing GERC's tariff order. The details of solution implemented and governance practices involved are as under:

Convincing SMC's Authorities to Install Wind Power: Primary feasibility study regarding financial viability of the project was carried out on the energy consumption pattern, energy rates applicable, historical energy rise over last 10 years and benefits applicable to industrial consumers applied for SMC's HT services. Indian Wind Energy Association was invited and it was decided to visit the existing sites where wind power plants were in operation and then represent the matter before Energy and Petrochemical Department of Govt. of Gujarat. Teams of engineers had visited the site of Lamba, Bhogat and Navadra of Saurashtra region



Solar panels installed on the roof top

where wind power plants were installed. SMC was convinced that if benefits given to the industrial consumers are also given to them, the project can be taken up. The matter was finally represented before GERC and they accepted SMC's request.

Tendering and Selection of the EPC and O & M Contractor: Selection base of the wind power plant is more complex than any conventional work. Hence, it was decided to appoint consultant and consequently, experienced consultant (Power & Energy Consultants, New Delhi) was appointed through open tendering in year 2007. SMC was doing such a work for the first time; hence, a "Technical Committee" comprising of one member each from ONGC, GEDA and SVNIT was set up for assisting scrutiny and deciding technical and financial parameters on which final selection was done. E-tender was published for 2 MW wind power project on total turnkey basis with O & M for 10 years in the year 2008. SMC had decided to use energy generated from wind power plant at Sarthana Water Works and Varachha Water Works as those were the most energy consuming services with high energy usage rates.

Result achieved

Till date, all the energy savings realized through Energy Efficiency and Renewable Energy measures for the whole of SMC have rendered 116.25 GWH per annum. If life line supply of Energy per capita is considered to be 100 units / annum, efforts in Energy Efficiency and Renewable Energy measures put together taken by SMC have made around 11.62 lacs poorest of poor energy secured across the city. Along with that, if a typical village is considered comprising of 1000 villagers, 1162 villages have been made energy secured across the city. The following table provides an insight of the results achieved till date by SMC, in the renewable energy and energy efficiency measures.

Table 3: Renewable energy and Energy efficiency measures- results (till April 2018)

Measures (for SMC)	Total Saving per annum (GWH)	Total Savings in Ele. Bill per annum (Rs. Cr.)	CO2 Reduction per annum (tonnes)
Energy Efficiency Measures	33.30	16.80	27,970
Renewable Energy Measures	76.50	48.50	64,260
Total Savings	109.80	65.30	92,230

Renewable plants in the city:

- Solar power plants: 20.07 MW
- Wind power plants: 71.6 MW
- Bio gas power plants: 5.25 MW
- Energy requirement of the city: 7940 GWH/Annum
- Energy generation from the renewable plants: 194.95 GWH/Annum
- More than 2.50 % electricity comes from Renewable energy sources (solar, wind, bio gas) against total electricity requirement of the city.

Sustainability

Financial: Having inspired by the energy saving realised (recurring saving more than Rs. 8.50 Crores per annum), further steps of energy auditing at 42 sites in Surat city is underway. Furthermore, energy saving being the objective for continuous improvement, all round efforts is put forth accordingly.

Social and Economic: Lifeline supply of Energy per capita per annum becomes around 100 units and based on that, through all efforts in energy efficiency and renewable energy measures put together till Nov-2018 have made around 10.98 Lacs 'Poorest of the Poor'



Water Treatment Plant in Surat

Energy Secured.

Environmental: With the motive of reduction in carbon footprint along with conservation of electrical energy & thus reducing conventional fuel/ energy sources usages, SMC has implemented various Energy Efficiency (EE) measures.

Transferability

Other Municipal Corporations like Ahmedabad Municipal Corporation placed work order to install 4.2 MW capacity of wind power plants, for which SMC provided all kinds of help to take such initiative.

Lesson learned from the practice

In order to economize every litre of water, which is processed and distributed to the citizens for its expenses incurred therein and as such water supply is made self sustainable, thus there is a need to formulate broader objectives which should include and take some steps simultaneously. The first one refers to the replacement of energy inefficient machineries by the efficient ones, along with measuring, monitoring and controlling all processes as well as energy parameters. Water supply charges should be revised considering the future requirements, from the existing ones and more people should be opting for metered connections.

Energy being one of the most precious components in today's context, needs to be conserved to serve the water supply economically resulting in protection of the environment. As the city population is increasing, the alternative arrangement of water transmission grid should also be economical in the cases like shut down of water works, power cutoff, natural calamities etc. Planning and reviewing must be done from time to time by the Hydraulic Department and Energy Efficiency Cell for timely and successful implementation of energy efficiency improvement works.

Takeaways from the project are as follows

- Sites selected must have energy consumption pattern in steady or increasing manner.
- Selection of sites must be done considering energy generation during high wind / Solar radiation period so that energy consumption should always be greater than the net energy available for use from wind / Solar power plant(s).
- Site must have higher energy usages so that maximum benefits can be availed.
- Well experienced consultant is always required for carrying out energy generation assessment, site selection and contractor selection process, especially for organizations like SMC.

The Surat Municipal Corporation (SMC) produces nearly 40MW of green energy from wind, solar and biogas. Another 10MW of energy will be produced in the next 12 months. Surat Municipal Corporation, against its annual requirement of 245 giga watts per hour (GWh), produces 86.5 GWh of renewable energy, which is 35% of its requirement. This helps it save Rs 52 crore from its annual energy bill of Rs167 crore. Besides, this also reduces greenhouse gas emission by 95,720 tonne per year.

Surat Municipal Corporation (SMC)

Surat Municipal Corporation is a local self government which has come into being under the Bombay Provincial Municipal Act, 1949. It carries out all the obligatory functions and discretionary functions entrusted by the BPMC Act, 1949 with the following mission: To make Surat a dynamic, vibrant, beautiful, self-reliant and sustainable city with all basic amenities, to provide a better quality of life.



REVITALIZATION OF DERELICT URBAN SPACES - CHHAKARPUR - WAZIRABAD BUNDH by VSPB Associates, I AM GURGAON, Haryana Forest Department

A 'green lung' amidst the high-end residential housing enclaves of Gurugram was created, resulting in improved quality of the place, by transforming and rejuvenating it into a vibrant urban space. The idea was to revive a Bundh, earlier used for dumping waste and open defecation along a nullah that used to stink as it carried sewer discharge from neighborhood slums. The 5.2 km long Bundh site earlier used by daily wage workers to commute from nearby slums to work places was now transformed into a public place and a barrier-free eco-mobility corridor was developed in the form of a 'Linear Park', with walking and cycling tracks providing non-motorized linkages through the city within the 35 acres of Urban Forest land.

Introduction

A revitalization project on a stretch of the **Wazirabad canal in Gurugram** was taken up to rejuvenate a Bundh, which was historically used as a check dam in a water collection/retention system. It was on the initiatives of cleaning up the area by an **NGO – 'I Am Gurgaon'** along with the Forest Department Haryana, that the Delhi based architecture firm - VSPB Associates decided on its strategy of clearing up the environs and revive the canal by working on the space around it, so that the focus could slowly return to the water. The 5.2 km long stretch of Bundh (of forest land) along a nullah, in the midst of high-end residential housing enclaves, was used as a dumping ground and for open defecation and was left in a sad state of misuse.

A design proposal was drawn up to create a public space and eco-mobility corridor in the form of a 'Linear Park', with walking and cycling tracks providing non-motorized linkages through the city. It was envisioned to promote pedestrian movement as well as cycling as an environment friendly movement system for short distance commute from one part of the city to another. This forest corridor also created a 'green lung' for Gurugram and provided a natural setting for leisure facilities to the adjoining residential areas.



View of the 'Linear Park'

Background

Across the world, several projects are aimed at rebuilding derelict urban environments to transform and rejuvenate marginalized places into vibrant public spaces for the city. The revival of such neglected spaces can serve to energize urban landscapes and create healthy environments for outdoor leisure for city dwellers. Realizing the importance of the same, a citizen-driven initiative was led by a local NGO, along with the state forest department and corporate sponsors, called the **Chakkarpur-Wazirabad Bundh Revitalization Project**, aimed at rebuilding a derelict and inaccessible strip in the city, to transform and rejuvenate it into a vibrant urban space.

Situation before the initiative: The site for revitalization, in Gurugram, was originally

a solid waste dumping ground and an open defecation area with a number of scattered encroachments within the forest land. The nullah used to stink as it carried a lot of sewer discharge from the neighbourhood slums. Huge amount of invasive, thorny vegetation of Vilayati Kikar (*Vachellia Nilotica*), which covered a major part of the area, made some stretches fairly inaccessible. The waste dumped here made it a home ground for a large number of pigs that were seen all over the site. A thorough clean-up operation was needed to be done to make the area free from all encumbrances. The plastic waste was to be collected and recycled instead of being disposed with the other garbage. And proper water treatment was needed to restore the nullah.

The initiative: The 5.2 km long Bundh site, for revitalization, traverses alongside several high-end residential neighbourhoods as well as squatter settlements. The Bundh was used by domestic help and daily wage workers to commute from nearby slums to work places in the residential neighbourhoods. The forest corridor, which served as a long cross-connection within the city and bypassed the busy vehicular roads, offered a fairly challenging commute corridor both for pedestrians and cyclists. The Bundh was, therefore, used as a subaltern space, otherwise ignored in the mainstream urban realms of Gurugram.

Key dates

The project started with the inauguration by Chief Minister of Haryana on **11th January 2016**. The site for revitalization, in Gurugram, was originally a solid waste dumping ground with a number of scattered encroachments within the forest land. A thorough clean-up operation was started and the area was made free of all encumbrances. Slowly the canal was revived by working on the space around it with the completion of pilot phase on 15th April 2016, within a span of 3 months. A community planting drive "freedom to plant Gurgaon green" took place on 15th August 2018 for making people aware of the project.

Main focus

The main focus was to rejuvenate the bundh and nullah that once formed part of an old irrigation system. Along with that the idea was also to create a barrier-free Eco-mobility Corridor in the form of a linear nature park (5.2 km long), thereby creating 35 acres of Green Lung for Gurugram-a Public Place in a natural setting for leisure and community activities.

Establishment of priorities

- To take up a pilot project of 200m stretch for implementation, in front of Paras Hospital and to revive the complete derelict stretch of the Chakkarpur-Wazirabad Bundh, on a forest land, cutting through the prime areas of the city.
- To take up a thorough clean-up operation to make the area free from all encumbrances and proper water treatment was necessary to restore the nullah.
- Plastic waste had to be collected and recycled instead of being disposed with other garbage.
- Mobility and Universal Accessibility were to be provided to benefit the targeted groups and the people residing in the neighbouring areas.



Situation before the initiative

- Forest corridor and its biodiversity needed to be revived by plantation of indigenous and native species.

Mobilization of resources

Financial resources: Initiated by a MoU between an NGO (I am Gurgaon) and the Forest Department, Haryana, the project was developed on a Public-Private-Partnership model and fund-raising was made from Corporate bodies, who contributed CSR funds for the project implementation.

Human resources: A technical team of Landscape Architects, Urban Designers and Architects made a proposal, which was first implemented on a pilot stretch on an experimental basis. This was well received by corporates like American Express, Indigo and others who committed to sponsor the entire project on the basis of a carefully worked out cost estimate, that decided the budget for implementation.

Other resources: The team on ground comprised of several contractors who were awarded work on the basis of competitive bids. A site supervisor was employed by the client for day to day monitoring of work on ground.

Process

The Chhakarpur-Wazirabad Bundh project was a collaborative initiative. The land came under the jurisdiction of the forest Department of the government of Haryana. A Gurgaon-based NGO took the initiative, hired the architectural firm as the technical consultants; a concept proposal was prepared and presented to the forest department.

The proposal looked into aspects related to the existing land uses, accessibility and mobility around the site, made observations of the existing sectional profile of the bundh and its relation to the nullah and suggested design possibilities for a pilot stretch, 200m long, on how to improve the quality of the place and bring this lost space back into the urban activities of Gurugram.

Having received an approval from the Forest Department, the NGO approached top Corporate companies in Gurgaon for mobilization of CSR (Corporate Social Responsibility) funding; presentations were made and after due deliberations, a top multinational bank agreed to fund the first phase of the project. Subsequently, topographical survey was conducted along with detail mapping of existing trees and a base map was drawn. As the site encompasses a historic Bundh along the nullah, the nature of the land parcel was essentially linear. The design, thus, looked at the opportunity to develop the site as an alternative sustainable mobility corridor for pedestrian and cyclist movement along with universal accessibility measures. Resting spaces with seating facilities were created as nodes within the linear corridor. Based on the spatial and technical standards, ramps, gates and other components of the tracks were worked out.

The key hurdles during the initiatives were essentially regarding the illegal occupation of the Bundh at several locations both within the site as well as at access points along the roads. These needed to be dismantled after appeasing the discontent and hostility of the unauthorized occupants. Stake-holders consultations and one-to-one discussions helped to convince people, with the help of the police and forest departments. A local level land



Challenging commuting corridor

revenue personnel, Patwari, was called to the site for earmarking the boundary of the forest land. The boundary of the land parcel was established with metal grills while keeping the visual connections with the adjoining properties.

A 200 m pilot stretch was first implemented and then another 800 m was also developed. With a complete makeover of a filthy stretch to a thoughtfully designed public place, other private companies were approached for funding by the NGO. Eventually, the complete 5.2 km length of the bundh was taken up. Plantation drives were conducted by the NGO.

The beneficiaries of the project are:

- The targeted groups of primarily economically weaker sections, who reside in the neighbouring slums and urban villages and use the Bundh for short distance travel within the city on a daily basis
- Residents of the neighbourhood high-end apartments who found the transformed Bundh an ideal place for their daily fitness/ leisure activities.

Result achieved

A bundh was transformed to create a barrier-free, ecological network in the form of a linear nature park, with walking and cycling tracks forming a non-motorized, environment-friendly linkage across the city.

Accessibility improvement: An alternative movement corridor has been created to provide an eco-friendly linkage across the city, with separate tracks for cyclists, pedestrians and the differently-abled/vulnerable groups. Ramps have been provided for people using wheel-chairs, strollers, walkers etc. and tactile pavers have been installed for the visually impaired. It has given the vulnerable user groups a much required sense of dignity of movement and feeling of social equality.

A Public space was also created in a natural setting for leisure and community activities. Pervious pathways and concrete tracks were laid out in a way that kept the existing trees undisturbed and hence, created a shaded movement corridor winding through the forest. More native plants were added to supplement the existing vegetation and enhance the biodiversity of the forest trail.

Sustainability

Innovative Use and Recycling of Materials: Resilient and maintenance free materials have been chosen for long-term durability and waste materials have been leveraged and recycled for effective cost control. Old discarded kerb stones were recycled to make toe-walls and retaining walls on the bundh and 35,000 cubic meters of construction debris from landfill and construction sites in Gurugram, have been utilized for earth-fill operations and in preparation of base layers of paving of the 5.2 km long stretch of the bundh site, facilitating utilization of roadside waste and reduction of project costs.

Environmental Sustainability: A complete rain water harvesting system was established with the help of French drains, sub-surface piping and recharge pits. Water bodies were rejuvenated and the nullah, wherever exposed was fed in with storm water overflow after surface percolation through permeable pedestrian walkways and green areas. Trenches



Bundh at Sec 52/53

Tracks for cyclists & physically challenged

with perforated pipes were connected to recharge pits for increased ground water recharge and ensure zero discharge into the municipal drains. Native plant species, suitable for dry, arid climate and those requiring minimal water after planting were used to create a water efficient landscape with enhanced biodiversity.

Socio-economic and cultural sustainability: The challenges of urban regeneration and sustainability have been addressed in the renewal of the urban backyard of the city, through the provision of socially inclusive spaces and in the planning and designing of a barrier-free movement corridor with all sections of the society in mind, including the differently-abled, with public spaces for social and cultural interactions.

Transferability

The Chhakarpur-Wazirabad Bundh project is a unique endeavour, unparalleled in the country, and shall set a benchmark of its own in terms of collaborations, methodology, design interventions and outcomes for similar work in future.

It has so far not been replicated in any manner, but can serve as a model for design of non-motorized mobility corridors in other metropolitan areas, in the use of sustainable and resilient surfacing materials and adoption of environmental friendly practices as discussed above. This will promote pedestrian movement as well as cycling as a pollution-free circulation system for short distance travel from one part of the city to another.

Lesson learned

The enormous vehicular congestion in the NCR region, dependence on private vehicles due to lack of better commuting options, even for short distance travel within the city and the alarming level of pollution motivate us to find greener solutions to the city's mobility problems.

This project has a unique context and has been implemented on a site-responsive, experimental basis and hence has not relied on any past experience. It teaches valuable lessons on collaborative citizen-driven initiatives and how corporate can play a role in improving the city's environment – to create better urban spaces for people. It also goes to prove that the solution to traffic congestion is not by making more space for cars, but by creating corridors for alternative modes of transport.

These ideas can certainly be used at other sites, but the design cues have to be responsive to the needs of the area of implementation. Also, the drainage of the area, especially of hard paved surfaces needs to be thoughtfully worked out in order to increase ground water recharge and hence reduce the load on the city's drain network. And native trees and plants are the most sustainable option for water conservation and for increased biodiversity.

VSPB Associates and IAMGURGAON NGO

VSPB Associates is a consultancy firm with expertise in Architecture, Urban Design, Heritage, Planning, Landscape Architecture and Design related fields. Formed in 1995, the firm is associated with projects of diverse scale and nature.

Iamgurgaon is an organisation by the citizen, for the citizen initiative in Gurgaon, aiming to help make Gurgaon, a better place to live. It provides a platform to bring citizens, residents welfare associations, corporate groups, schools, state administration and other stakeholders in a collaborative partnership to effect the transformation of Gurgaon into a true Millennium City.



Before and after images of the project

Layout Plan
(Ph-3)...700m
stretch near
Paras Hospital

DESIGN PROPOSAL

Green
Mobility...



MOBILITY & ACCESSIBILITY



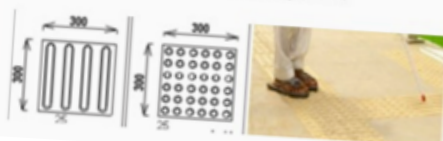
ECO-MOBILITY CORRIDOR
A linear park with walking and cycling tracks, providing non-motorized linkages through the city

UNIVERSAL ACCESSIBILITY

Ramps for people using wheelchairs, strollers, walkers, crutches & for visually impaired



Tactile Paving in the direction of pedestrian movement for the visually impaired



ECO-FRIENDLY DESIGN



Reduce impact on the natural environment

PERMEABLE PAVING for effective water percolation

SOLAR POWERED LIGHTS for Street Lighting

REVIVE THE FOREST and Biodiversity with planting of native, indigenous species

SAFETY & COMFORT

Enclosure of site with fencing that allows visibility IN & OUT

Adequate street lighting for pedestrians and bicycles



CLIMATE SENSITIVE DESIGN
Planting for shade and better microclimate



The bundh is an important barrier to check floods. It is also significant for groundwater recharge. However, this area was neglected and encroached upon as the city developed. (KINDNESS: SEARCH PHOTO)

First stretch of Chakkarpur Bundh restoration completed

Ipulita Paul

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GURGAON: A 200-metre stretch of the 5.5 km-long Chakkarpur Bundh has been redeveloped in the first phase of the restoration project of the bundh. The stretch, which had become a solid waste dumping ground and a site for open defecation, has been developed into a green space.

This project is being developed on a public-private partnership model. The first phase was completed with the efforts of NGO IamGurgaon, civic authorities and corporate groups. It will take a year to fully develop the area.

The bundh is an important barrier to check floods. It is also significant for groundwater recharge. However, the area was neglected and encroached upon as the city developed.

"This stretch has porous tiles, rainwater pits and tactile pavements to assist the visually impaired in the green area," Nidhi Arora of Esha—an organisation that works for the visually challenged, said. "This site is also easy to use

they say

Our (the forest dept) vision is to create an aesthetic as well as a recreational site and this project fits the aim perfectly. MD SINGH, conservator of forests, Gurgaon

This stretch has porous tiles, rainwater pits and tactile pavements to assist the visually impaired in the green area. Nidhi Arora, Esha

for the physically challenged as the ramps and surface is constructed keeping in mind the wheelchair users. Tactile pavers also help the movement of the visually impaired.

This area will help preserve rainwater as water will seep into the ground through the porous stretch and rainwater pits. Latika Thakral of IamGurgaon said a route has been developed for pedestrians to cross from one part of the city to the other without having to use the main road.

The newly developed site has permeable patches for ground water recharge and saplings of local trees will be planted soon.

Around 2.6 km of the bundh will be developed by IamGurgaon and American Express and the other half will be developed by the Haryana Urban Development Authority (Huda). The stretch from Chakkarpur village to Paras Hospital will be renovated by the Huda and from Paras Hospital till Sector 56 will be developed by the forest department of Haryana, with the cooperation of the NGO.

However, the bundh has a waterbody close to it and it belongs to the Huda. The waterbody is in a very bad shape as it is filled with garbage. The cleaning process will take time, a forest official said.

The Telegraph July 3, 2017 | Kolkata | Metro Pg. 11

Makeover blueprint for city canals

CHANDRIMAS BHATTACHARYA

July 2: Call it the indirect approach.

A group of architects, who revived a canal in Gurgaon by working on the space around it, has a set of plans to revitalise Kolkata's canals as well.

SEARCH, a Delhi-based architectural firm, which released the book *Blue Lines of Kolkata* on the canal network of the city at Oxford Bookstore last week, spoke about a few specific proposals it has on the city.

But its starting point was the Gurgaon project.

In 2015, VSPB Associates, the knowledge partners of SEARCH, took up the Wazirabad canal in Gurgaon, which was an irrigation canal constructed during the British era and has a mud bundh constructed along it. The canal area was used often as a shortcut by women who worked as domestic help to return home to adjacent slums, and they frequently complained how insecure they felt walking by the dark, dirty canal side. The canal side was an open defecation area. Pigs would roam about.

So, when an NGO, IamGurgaon, initiated the idea to clean up the area, VSPB Associates decided on its strategy of clearing up the environs, so that the focus could slowly return to the water.



The firm worked on 2.5km of the 5.2km canal side, the rest was a Haryana government project.

"We first built cycle tracks. Building debris from construction projects in Gurgaon was recycled as consolidating material on which the tracks were built. No vehicles are allowed in the area," said S.P.

Biswas of SEARCH, who has edited *Blue Lines of Kolkata* with Sourabh Tewari.

Pedestrian tracks were built using material that soaked rainwater to recharge the canal. Rainwater is precious in Haryana. Gates were designed in such a way as to admit wheelchairs, but no vehicles. The space is also designed to give complete access to the visually impaired.

"And not a single tree was cut," says Biswas.

As a result, today the space is not only an open, public space which attracts morning walkers and children, it is also an example of how a govern-

ment can be moved into action. "Since this space was opened up, people started looking at the canal water, clogged with plastic and sewage. No one threw plastic in any more. And last week Gurgaon authorities began to clean the drain," said Biswas.

The project had been funded by American Express CSR.

In Calcutta, which is a network of canals, much of the waterlogging is because of the fact that the canals are not cleaned. "The pollutants form a thick surface, because of which the water does not flow," said Biswas. The water from the city does not drain.

SEARCH's proposals for the city are included in *Blue Lines of Kolkata*. In December it held a workshop in the city with IIT Kharagpur at the institute's Salt Lake campus, in which architects, students and experts from other disciplines participated.

The workshop looked at three city canals: the Beleganga canal, the Salt Lake canal and the Kestopur canal and came up with nine proposals, graphic representations of which were on display at the bookstore.

The proposals talk about practical but creative solutions on the canal banks that take into account the population living there, their livelihoods and the geographical features of the locality. One proposal on the Salt Lake canal recommends making the banks themselves an exhibition of the city.

In Seoul, an elevated highway over Cheonggyecheon creek, once dirty and neglected, was removed to turn the area around it into a lively arts district. Such thinking is required in urban planning, says Biswas. Calcutta needs an Urban Arts Commission, he says.

AWARD PHOTOGRAPHS



Energy Security Efforts by Surat Municipal Corporation



Revitalization of Derelict Urban Spaces - Chhakarpur - Wazirabad Bundh
by VSPB Associates, I am Gurgaon and Haryana Forest Department



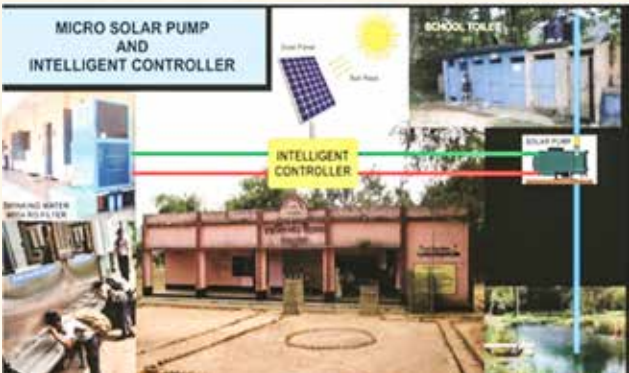
ENVIRONMENTAL MANAGEMENT, ENERGY CONSERVATION AND GREEN BUILDING

2011-2018

YEAR 2017-18

HERMA - an Example of Sustainable Habitat by NB Institute for Rural technology

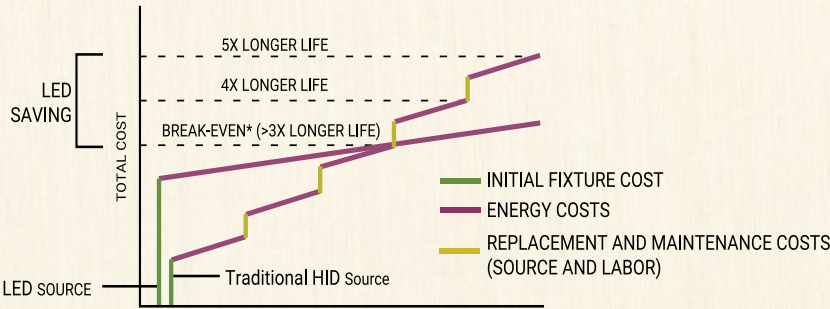
Tribal people of the North-East India live in harmony with nature. However, with the intervention of urban modern technology, they experience conflict between their own culture and so called urban culture resulting in disturbance of lifestyle. **‘Green Rural Habitation-practice and implementation’** is the main vision of NB Institute for Rural Technology (NBIRT). The Institute had studied this particular problem of a tribal village of Tripura styled as Herma located at Sepahijala district. It has tried to understand the problems related to housing, sanitation, safe drinking water and rural waste management. The unavailability of electricity and its impact on the real life was studied. Interventions were made in numerous areas like 24 x 7 lighting & safe drinking water facilities with micro solar power, ferro cement based community toilet construction, rainwater harvesting and rural waste processing through a low-tech landfill technology.



Micro Solar Pump and Intelligent Controller

PUNE STREET LIGHTING PROJECT under PPP Model by Pune Municipal Corporation

The project of Pune Municipal Corporation (PMC) aimed at replacing 80000 existing conventional street lights with energy efficient LED street lighting systems integrated with a SCADA system, which was estimated **to save more than 61% energy** and is controlled through a dedicated command and control centre. The project was implemented on public private partnership basis, with no cost to the city. The previous light fixtures which included, T5, HPSV, metal halide, Induction Lamp were replaced with highly efficient dimmable/non dimmable LED street lights along with approx. 1900 feeder based SCADA system. Operation & Maintenance of the light fitting & SCADA system have been considered for twelve years.



Cost module for energy efficient street lighting



Energy efficient LED street lighting system

URBAN GREENING INITIATIVES by Andhra Pradesh Urban Greening and Beautification Corporation

Andhra Pradesh State Government has taken up a sensible yet bold initiative with a vision to enhance, sustain and monitor the green cover in the State by setting up a separate vertical of Andhra Pradesh Urban Greening and Beatification Corporation (APUG&BC). APUG&BC right from its inception has focused on improving the green cover across the State. The priorities were set for the next five years such as - one major park with a minimum

area of 5000 sq.mt. was planned in each Urban Local Body (ULB) area, **protection of water bodies and development / beautification** of the same as tourist destination, duly improving with landscape, children play area, etc., development of at least two colony parks in each 32 numbers of AMRUT urban local bodies, green strip (shrubs) on a vacant land and trees along the roads within the right-of-way and on the central verge (median).

YEAR 2016-17

INITIATIVES OF WORLD’S FIRST AIRPORT fully Powered by Solar Energy by Cochin International Airport Limited

Cochin International Airport is the first green field airport in the country built with public-private partnership. The airport has been acclaimed for setting a novel idea in infrastructure development. The airport became power neutral in August 2015 and has been acclaimed as the world’s first airport fully powered by solar energy. This idea has fetched the airport the sobriquet, **‘GREENPORT’**.

The airport encompasses an area of approximately 1300 acres spread across four panchayats and one municipality and about 1.5 lakh people live in these areas.

As an organization which successfully pioneered cost-effective ways of building and operating an airport, CIAL's (Cochin International Airport Limited) solar projects have got larger implications. As the airport operates 24 X 7, the power bill was very high. This provoked an alternative thinking. It experimented with a 100 KWp solar power plant in 2013, on the roof top of the arrival terminal block and then scaled up the installation capacity to 1 MWp placed both on the roof and the ground. As the initiative demanded more operational focus both in technical and human resources verticals, a special task force was formed and put into action.

The success of these plants prompted up-scaling of operations which led to commissioning of the 12MWp capacity solar plant on 18th of August 2015 and Cochin International Airport became the first airport in the world to be fully powered by solar energy. This was set up in a land area of 45 acres near the International Cargo premises. By the end of 2016, the total solar capacity of Cochin Airport became 15.5 MWp, capable of generating around 62000 units of electricity every day. Till date Cochin Airport has produced more than 3.50 crore units of solar energy worth approximately Rs. 24 Crores.

At present, the solar plants set up in different places, like cargo premises, over car park, and over concrete pillars constructed across a canal is generating total 29.5 MW power. These solar plants have so far saved more than 550MT of CO₂ emission, contributing to the efforts of CIAL towards minimizing environmental degradation.



Solar Panels installed in parking area

YEAR 2015-16

CONSTRUCTION OF GREEN BUILDING: Head Quarter of Navi Mumbai Municipal Corporation by Navi Mumbai Municipal Corporation

Navi Mumbai Municipal Corporation(NMMC) planned to build their Head office at Plot No. 1 & 2, Sector 15A of CBD Belapur, Navi Mumbai with the prime motive of **bringing all the departments of NMMC under a single roof**, in a central location, easily accessible to people. The project site is spread over 27422 Sq.mt. of area. 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). Building area of the main structure is 6700 Sq.mt. and it is a Basement + Ground + 7 storey structure which consists 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 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 floors respectively. The General Body & Mayor, Commissioner Offices are designed 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 of a 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 recognized as a World Record for Longest PT span in a building by Limca Book of Records. The GRC Dome with 37m dia above the central Deck slab is in structural steel and GRC (Glass fiber Reinforced Concrete).

Green building features: The building design is with maximum use of natural light for office area, ventilated atrium planning, cavity wall design with permanent exterior finishes,

high performance double glazed panels with recessed windows, façade with dry cladding, terrace with reflective tiles and low VoC paints etc., Lighting is from the façade and occupancy based area lighting, LED lighting, reflective fixtures and also from certain critical area lighting with sensors. Plumbing is with hydro pneumatic water supply system, low flow flush, sensor based/push button water taps, rainwater collection and reuse. Moving Bed Bio Film Reactor (MBBR) technology based sewage treatment and drip flow irrigation for landscape with native species etc., efficient air conditioning system, 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 attractions are its elegant design landscape and light illumination.

NMMC, by incorporating these green measures in its own Head office, has set an example for the future projects to be taken up by them or other developing bodies. These could be termed as guidelines emerging from understanding individual responsibilities towards the greater good, and a self initiated effort for a Greener Future in Indian cities.

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.

Layout plan of Green Building



PROMOTING FLY ASH UTILIZATION TECHNOLOGIES for Sustainable Construction, Raichur by Cashutec Building Centre

Cashutec Building Centre has taken the **initiative of environmental protection activity** like scientific disposal of waste materials for productive activity, thereby avoiding environmental pollution and at the same time obtaining 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 centres 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, it aimed at developing pond ash as a partial replacement to river sand for application in the production of precast concrete products and in masonry mortar. It also included collection, segregation, composting of wet waste, recycling of dry waste, recycled aggregates from Municipal Solid Waste for the secondary application in construction of low cost and small houses and buildings.

Main focus of the practice was on manufacturing and marketing of eco-friendly building products using waste material of such nature, organizing skilled training program for upgrading the skills of the construction work force in the updated trend construction practices like sustainable environmental friendly construction practices. Further, it focuses on

demonstration of sustainable eco-friendly building materials and technologies in live construction projects like housing, sanitation, school buildings, anganwadis, socio economic infrastructure works, art culture and heritage structure etc. Kendra has achieved its sustainability by selling building products manufactured under production activity and generates profit of more than 10%. Similarly work executed by the center also generates more than 5% profit. With the combined profit of production and work executed activity, the center 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.



Fly ash building products being manufactured

YEAR 2014-15

REJUVENATION OF WATER RESOURCES – Rain Water Harvesting by Maharajpur Nagar Parishad

Historically, Bundelkhand has been periodically subjected to drought but the people have over time evolved elaborate mechanisms to cope up with it. What has changed in recent years is that the traditional coping mechanism had fallen apart. In addition, the rapid urbanisation destroyed the historical water structures and the region is facing serious issues related to water. Maharajpur is one such municipalities of Bundelkhand which demonstrates how traditional approach can still give positive results.

Maharajpur Nagar Parishad (MNP) was facing acute shortage of water due to scanty of rainfall and low yield of ground water. Considering the sensitivity of the matter, MNP placed water on the highest priority of its work agenda. Before initiating, the Council decided to involve all the stakeholders in decision making process. The traditional approach of water conservation and local technologies were pooled together. Water flowing in the nearby "Kajli Nallah" was retained by stop dam and transferred through construction of a 3 km long

canal to a lake located within the town. The process eventually rejuvenated all the wells and hand pumps, which ultimately brought back the famous betel agriculture.

In the entire process, the most important aspects were the **use of local technology, traditional approach and community participation**. The local people realised the efforts of Nagar Parishad and contributed financially ("Dhan-Daan") as well as physically (Shram-Daan) in the entire process. As a result, MNP succeeded in providing 90 lpcd water to its citizens and the citizens are also assisting Parishad by paying water charges regularly. The betel farmers and fishermen regained their livelihood. A tremendous rise in the groundwater level has been observed. It is one of the most innovative initiatives for service delivery, taken by any of the ULBs in Madhya Pradesh. It shows the success of community participation, traditional approach and Good Governance.

Before and after image of the project



Shivsagar lake - Prior to initiative



Canal during construction



Shivsagar lake - in the present scenario



Shivsagar lake - Fishermen on work again

YEAR 2013-14

GREEN BUILDING CONSTRUCTION by Haryana Police Housing Corporation

Haryana Renewable Energy Development Authority (HAREDA), a nodal agency of Haryana Govt. intended to spread the message of Green buildings, especially water conservation in a sustainable manner. The HAREDA was having a land of 1 acre at Plot no. 1, Sector-17, Panchkula for constructing their **Head Office building** and they chose to **construct upon a building on this for demonstrating various Green technologies** and with this on 25th April, 2008 the project kick started. All the financial resources were arranged by HAREDA from the government. It was envisaged to get the highest Green rating of "Five Star" under GRIHA.



Interior view of the building

Accordingly after the competition among the various designers, the building design and features were finalized. It has a basement and three floors with a total plinth area of 55000 sq.ft. The construction cost in Rs. 1200 lakhs including solar panels installed on its roof. The building has a unique way of rain water harvesting by which the rain water from the building area is stored in the underground water tanks (509 cum) in central courtyard of the building. The grey water from washbasin/ bathrooms is re-used after filtration for landscaping using drip irrigation system. The grass pavers too helped in soaking the rain water and percolating it to the ground. The cavity was filled with XPS foam, passive downdraft evaporative cooling system, solar passive design of the building, fly ash brick walls, autoclaved aerated concrete blocks, water saving faucets, 42.5 KW integrated solar photovoltaic system, heat resistant roof insulation tiles etc. are features which amply achieved the objective of demonstrating the Green Building elements and it was completed on 22nd December, 2012. The building got it rated from an independent agency GRIHA (Green Rating for Integrated Habitat Assessment) with highest ranking of "Five Star" in the year 2014.

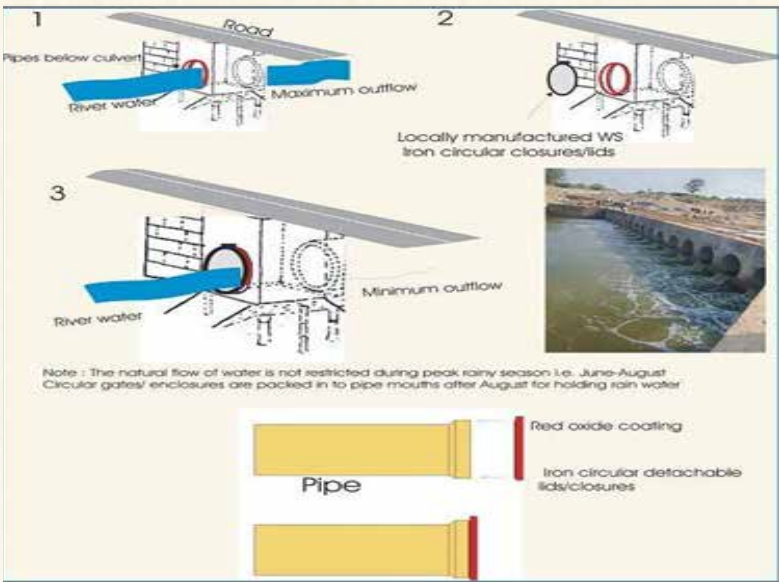
The Confidence gained by using green products in demonstrative project of HAREDA resulted in the usage of various elements in other projects. The items used were Cavity walls, AAC Blocks, UPVC windows, Low VOC Paints, Heat resistant proof insulation tiles, Solar water heating system, Sensor doors, Rain water harvesting, VRV system etc. The Haryana Government. through Haryana Renewable Energy Department Authority (HAREDA) propagated the message of usage of renewable resources and conservation / efficient usage of resources.

RAIN WATER HARVESTING IN GAUTAMPURA by Urban Administration and Development Department, Govt. of MP

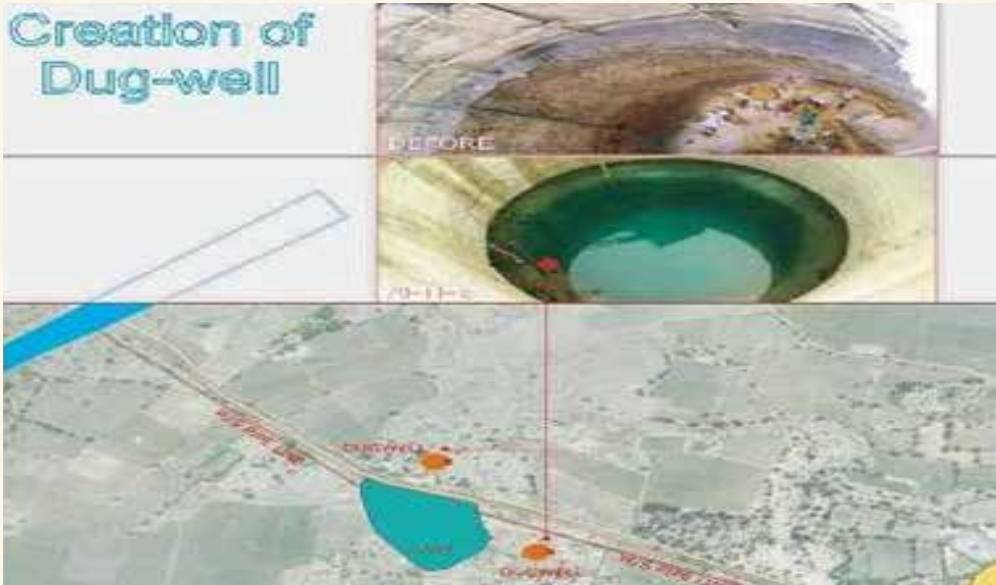
Similar to other municipalities of Madhya Pradesh, Gautampura Nagar Parishad (GNP) was facing **acute shortage of water** due to scanty rainfall and low yield of ground water. Disputes over getting water from the tankers became a common practice and masses were badly irritated and tormented due to this mismanagement. After some years when the problem became uncontrollable, people came on the streets and started road block agitations/hunger strike etc. This resulted in mismanagement and helplessness in the ULB and they elected a new council in the year 2004. Council with youth leadership analyzed the overall situation of water supply in the town. GNP organized meetings with the senior citizens of the town and analysed the reasons behind shortage of water and also discussed on possible solutions. **The traditional approach of water conservation and local technologies were pooled together.** Water flowing in the nearby non perennial river 'Chambal' was retained and transferred to a nearby artificial lake. In order to collect the water percolating from the lake, 2 dug-wells were created. As a result, water got filtered naturally and was collected in the dug-wells, from where municipality supplied water to the entire town. In the entire process most important aspects were use of local technology, traditional approach and community participation.

The success of this effort rested on the belief of the traditional knowledge and experience of the elderly people. After the implementation of works, when it rained, all the structures constructed by Nagar Parishad to collect water became full with water. Within a short span of time a great rise in groundwater level was recorded. Water streams got erupted in the newly built wells near the tank in 'Kharcha' region. This was a clear indication of rise in ground water level due to recharging of water bodies. After sufficient quantity of water was arranged, Nagar Parishad laid 2.0 kilometers long pipe-line from dug-wells and started supplying water to the town. This way the problem of drinking water was solved.

Gautampura is the only Nagar Parishad in whole district that got a sustainable water supply mechanism that time. The success of the 'Novel Experiment' of conserving water by Gautampura Nagar Parishad became exemplary. This model of Gautampura has been appreciated by the Principal Secretary, Urban Administration and Development Department and a letter was issued to all the ULBs of Madhya Pradesh to adopt the same model.



Process of rain water harvesting



Creation of Dug-well

YEAR 2012-13

USE OF PASSIVE TECHNOLOGIES for Energy Conservation by CREDA and Chhattisgarh Housing Board

Chhattisgarh State Renewable Energy Development Agency (CREDA) along with Chhattisgarh Housing Board took up the mission to erect energy efficient building – CSERC office building in the State of Chhattisgarh. The building was conceived total number of 3 floors - the 1st floor accommodated Chhattisgarh State Electricity Regulatory Commission (CSERC) and the 2nd floor accommodated Chhattisgarh State Renewable Energy Development Agency (CREDA). The floor area of CSERC office building was 2072.5 sqmt. It consisted of 80 kW Solar Photovoltaic (SPV) Power Plant situated on the Ground floor. The power consumption of the building from August 2011 to July 2012 was noted and observed that the power generated from SPV plant during the period was 86308 kWh whereas power import from Chhattisgarh State Electricity Board grid was 53416 kWh. Hence, export of surplus power was 323892 kWh against actual figure of 33897 kWh. Hence, net Energy Performance Index (EPI) was (-) 15.87 kWh/sqmt/annum. However, the gross EPI was 50.85 kWh/sqmt/annum with gross consumption of 105826 kWh where more than 70% of gross carpet area was conditioned/completed.

Since Chattisgarh State enjoyed maximum number of sunny days annually and keeping this in the view, the orientation and volume of the building was conceived by formulating VOC analysis. The orientation of the building was designed as North-South. Solar umbrellas were provided with an inclination of 78 deg from the ground which shaded the outer walls. 3 layers of walls with cavities in between were provided to reduce the U-factor. Air conditioned and non-air conditioned spaces, which eventually turned in to explorative cooled areas were distributed effectively. Evaporative ductable cooling facility for cooling non-AC spaces, walls and roof insulation was provided in the design. Internal sensitive fibers were carefully shaded to reduce heat gains. Based on the above, maximum internal illumination load comes about 3.00 kW against total maximum connected load of 100 kW.

The building design reduced cumulative energy expenditure to the tune of about 45% with respect to any general office building in summer and about 15% in winter though strategic design confirming relevant principles of solar passive technology.

With the above, the final gross EP came down to about 50 kWh/smt/annum and more than 60% of gross carpet area was conditioned/cooled. After 80 kW SPV power plant installation, the net EPI came down to (-) 15.87 kWh/sqmt/annum. During that time, CSERC building was the 1st Net Energy Plus building of the country. Furthermore, it was awarded 5 Star rating by Bureau of Energy Efficiency (BEE) (Govt. of India, Ministry of Power) for being the most energy efficient building in the State of Chhattisgarh.



Exterior view of the green building

DESIGN, CONSTRUCTION AND O&M ARRANGEMENT OF THE FOREST COMPLEX, SAS Nagar, Mohali by Department of Forest and Wildlife Preservation

The 'Forest Complex' – a **green building** design of the **Principal Chief Conservator of Forests (HAG+)** was constructed by Department of Forest and Wildlife Preservation, Punjab on a 2 acre institutional plot with all modern amenities. The Complex was comprised of five inter-connected Towers (RCC structure with attractive Aluminum Composite Panel/DGU's of High Performance Glass on Façade). Constructed at a cost of Rs.57 crores, the 100 ft high building with covered area of 1,51,385 sq.ft. (14, 070 sqmt.) had a basement, ground and 7 upper floors.

Earlier the working conditions (especially for staff) were very poor and there was huge wastage of time, energy and money on correspondence between different offices. The general public was also subjected to great inconvenience on account of the scattered location of the offices. Hence as a result of the above project initiative, all the offices of Punjab State Forest Department and Corporation (PSFDC), which were earlier located all

over Chandigarh and Mohali were shifted into three out of the five towers of the complex. The remaining two Towers were rented out.

The priorities established for this project included construction complying with the Green Building design principles having special emphasis on energy conservation. The complex to generate adequate funds for payback of loan and its sustainable O & M was designed.

The complex was environmentally sustainable as a host of 'Green Building' and 'Energy Efficient' measures were adopted in its construction. Particularly noteworthy in this regard were the Occupancy/LUX level sensors, which controlled the A/C Cassettes and all lights. Installed at cost of about Rs.51 lacs, these sensors were estimated to result in saving minimum 25% of the Electricity consumption (or average saving of Rs.2 lacs per month). The complex attracted large number of students from colleges of architecture in the region who imbibed the practices adopted in this project.

YEAR 2011-12

IMPROVING THE CITY'S LIVING ENVIRONMENT by Suryapet Municipality

Suryapet Municipality, a Grade – I Municipality in Nalgonda District of Andhra Pradesh with total population of 1.05 lakhs, was pioneer in Solid Waste Management and many environmental conservation activities **to help conserve the ecological balance and environmental protection**. Earlier in the year 2009, the town became infested with mosquitoes and 100 Dengue cases were reported. The tanks in the town were encroached upon. The ground water table had gone down, affecting the quality of ground water. The consumption of energy had gone up in municipality and town.

In order to focus on to the issues identified, the municipal staff mobilized the urban poor through Self-help groups and harnessed a sense of ownership and responsibility among the urban poor. The projects that were taken up by the women groups with the support of stakeholders in the town of Suryapet included the massive plantation of 1,18,000 samplings in various localities. Plants were collected from philanthropic persons and these were given to the urban poor household free of cost with the aim of at least 2 plants person. The Forest Department gave 23,000 plants. While plants were available in abundance, space for plantation was not available. Hence, kitchen gardens were taken up along with utilisation of outside space for plantation. Lake Water Conservation cum Rain Water Harvesting has been developed in the tanks of the town. Sewage water from the town was diverted from lake water; the encroachments along the tanks were removed by involving the staff, with the help of officials and District Administration. Periodic meetings were conducted with

all stakeholders including the beneficiaries to educate, communicate and bring behavioral changes that would result in the community members taking responsibility towards sustaining the projects and bringing greater socio-economic gains to the people.

In two years on planting of numerous trees by the team of Suryapet Municipality involving the Self-Help Group (SHG) network, NGOs, Philanthropists and the District Administration, the ambient air quality became good in the town and compost yard as well. Fruits and vegetables such as drumstick, banana, and papaya were made available to the poor through usufruct plantation and kitchen gardens. Waste water was utilized for plants, allowing recycling of water. Dry waste selling, wet waste recycling also increased, which generated small quantity of revenues to the local body.

The banana plantation decreased the consumption of plastic. The dengue cases in the town have decreased from 100 to 10 after the Gambusia fish and Addasaram leaves initiative. Lake conservation increased the ground water table in town and recharged the surrounding bore wells. The contamination of water in bore wells had decreased a lot. Flora and fauna had also increased around the lakes and town. The breeds of honeybees, country birds, cranes, butterflies increased in the town, enhancing the bio-diversity.

The other areas of the District and few other States started emulating the experience of the Suryapet town Municipality.

KANKARIA LAKE REDEVELOPMENT by Ahmedabad Municipal Corporation

Having a periphery of about 2.5 km, the historical Kankaria Lake is situated nearly at the centre of Ahmedabad city and an evergreen outing place for the people of Ahmedabad. Kankaria was visited by hundreds of visitors and was an urban chaos characterized by unclean Ghats, traffic chaos on the 3.8 km periphery road, unorganized street life including a congested eating area on one corner thriving with street food vendors.

The project for **redevelopment of the lake and its precincts** was taken up by Ahmedabad Municipal Corporation (AMC) in 2006 and completed in December 2008 with a cost of Rs 36.00 Crores, with objectives of converting it into an international quality urban public space for recreation and leisure, showcasing Indian culture and lifestyle, and provision of high quality resource and asset management, given that the lake represented a source of aquifer recharging water and air for the environment in the area. The entire lakefront areas have been pedestrianized with a 2.25 km long continuous pedestrian promenade made of grey granite and with addition of a bicycle track. Green space was enhanced by creation of two linear parks 200 m wide one on each side. Further, provision was made for a 42 m long mini toy train around the periphery. 45 scattered food vendors were provided designated spaces/food stalls of uniform design with compressed natural gas, electricity with individual meters and piped water supply. The project also included construction of new public toilets, drinking water (RO) supply and provision for creation of a handicrafts market. During 2011, more than 1.18 crore visitors have enjoyed the ambience of the transformed Kankaria Lake Front, over 12.5 lacs visitors and children have taken the joyride

of mini train. Approximately 7,500 citizens per day visit for jogging regularly. Festivals, small gatherings, educational tours, informal meetings, picnics etc. have become new face of Kankaria to attract younger generation in a meaningful way. Further, the lake is emerging as a platform for creative expressions of different communities of artists.



Kankaria lake redevelopment

SABARMATI RIVERFRONT REDEVELOPMENT by Ahmedabad Municipal Corporation

Despite its historic and environmental importance to the Ahmedabad city, the Sabarmati river was subjected to severe pressure and abuse owing to growth and expansion of the city. The Sabarmati Riverfront Development Project Ltd., (SRDPL) is an **urban renewal project to improve the spatial structure and habitat conditions of the river** and adjoining areas with aim to transform Ahmedabad's historic yet neglected river into a vibrant and vital focus for the city.

The development project encompasses both banks of the Sabarmati for an 11.5 kms stretch, creating approximately 202 hectares of reclaimed land. The project includes water management systems to minimize flooding in traditionally flood prone areas and to clean up the Sabarmati with new sewage treatment infrastructure. A key element of the project is a new linear two level promenade. The major proposals regarding land use are creation of the East River Drive (four lane) and the West River Drive (four lane), junction improvements, access roads and connection with bridges, pedestrianized tree lined walkway, nearly 70 acres of parks and gardens spread over 5 different areas are envisaged along the river edge. Creation of commercial areas was planned on both east and west banks with infrastructure creation for Sunday informal market and flower market. It was proposed to lay water mains and trunk sewers to serve the requirements of the proposed new developments.

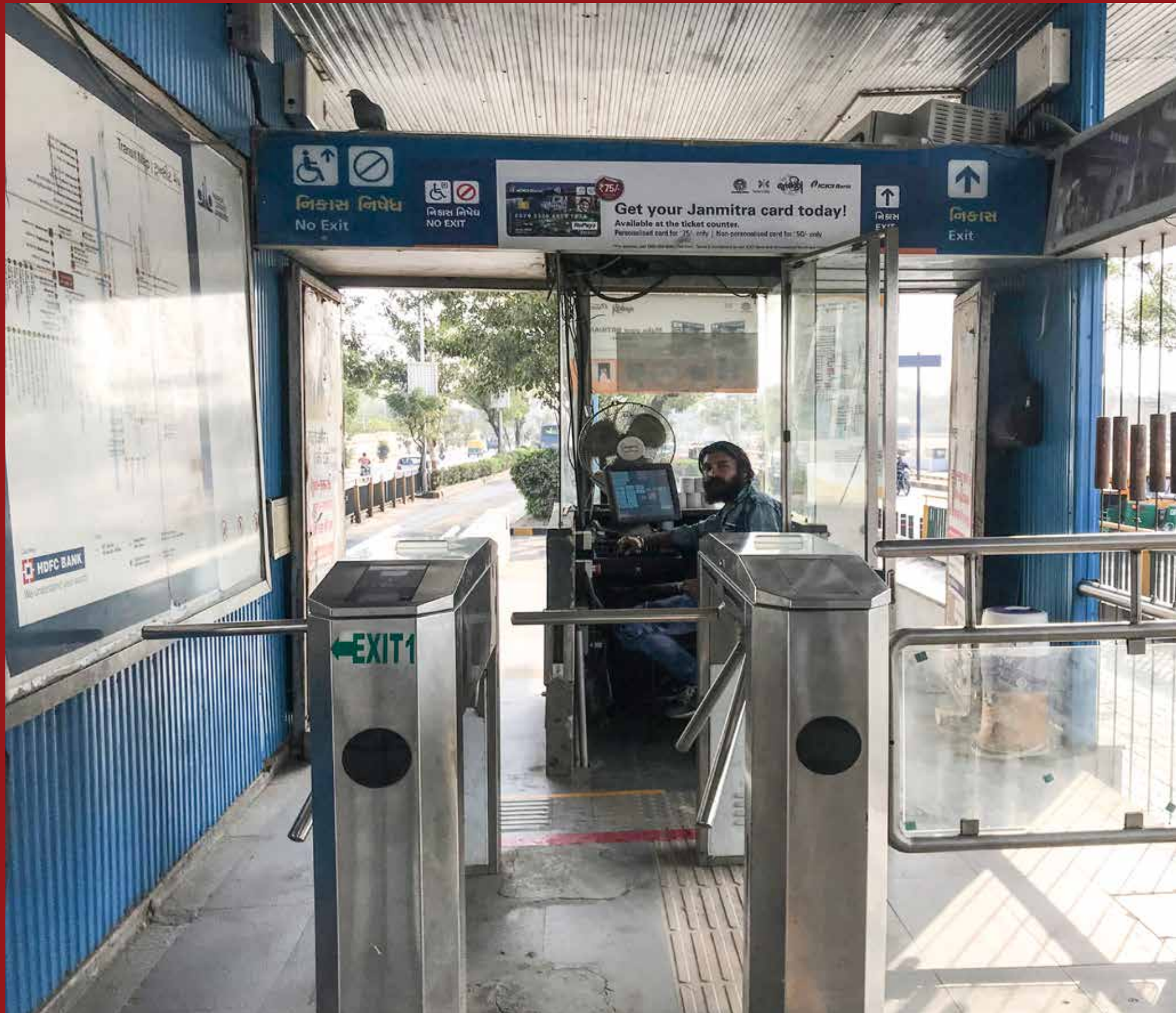
10162 project affected families were identified for Resettlement and Rehabilitation and new housing units were allotted. Occupancy to these units commenced in 2011 with 7348 families. The project has inspired other cities like Chennai, Rajkot, Surat etc., to create their own models for water front development.



Sabarmati riverfront redevelopment



Energy efficient LED street lighting system - Pune Municipal Corporation





URBAN TRANSPORT

2018-2019



YEAR 2018-19

CITY BUS SERVICES AT TIER II AND III CITIES AND TOWNS

by Karnataka State Road Transport Corporation

To cope up with rapid urbanization, Karnataka has a growing necessity of efficient public transportation system, especially for its smaller cities and towns which lack in it. This has been fulfilled through the introduction of city bus services at Tier II and III cities / towns. Value addition to the city bus services in terms of Intelligent Transport System, GPS based bus announcement and next stop announcement system, online commuter portal, Mobile App for commuters were the key features in this initiative. Last mile connectivity has been ensured through integrating various bus services and public bike sharing. Real time information of city bus through Mobile App, integrated trip planning and city passenger information board in some locations are some of the smart initiatives taken during the project implementation. As on 2019, the city bus service caters to in excess of 11075 daily trips operating 1.75 lakh kilometers with ridership of 5.1 lakhs per day , through 786 buses across, cities having cumulative population of 38.75 lakhs. The project has resulted in increase in ridership, shift of commuters to city bus from other mode, reduction of passenger waiting time and reduction of carbon footprint.

Introduction

There is an ever increasing preference for use of personal vehicles for commuting due to the absence of efficient public transport service in urban areas, especially in the small towns, which in turn leads to the problems of road congestion, pollution and lack of road safety in such towns. An urban area with a poor public transportation system, unorganized and dysfunctional bus system leads to an increase in para-transit, private and other intermediate modes.

Karnataka is one of the five most urbanized states in the country and it is estimated that 50% of the population of the State would be living in its urban areas by 2030. In the wake of urbanization, many challenges come up and a significant one being the assurance of sustainable mobility options for the urban populace. Karnataka has already had a popular bus-based transit system evolved over the years but need for an efficient public transport system in growing medium size cities has so far been not successfully met. In major metropolises having population of more than 20 lakhs, Mass Rapid Transit Systems like Metro and BRTS have been propagated and are already in the process of implementation. However, for small metropolises and particularly Tier-II cities having population between 3 to 10 lakhs, effective system of city bus operations would be the only mainstay for Public Transport System.

Considering the need, necessity and demand for public transport, Karnataka State Road Transport Corporation (KSRTC) in line with the National Urban Transport Policy, took up the **visionary & strategic initiative of introducing organized public transport buses in medium and small towns and cities**. The public transport system would be affordable, accessible, and efficient and would offer a choice of feasible transport mode.

Background

Small size cities and towns in Karnataka, which lack threshold population to grow a mass transport system, have resulted in growth of personalised vehicles like two-wheelers & other personalised modes. Unorganized and dysfunctional city transport system has made dependency on autos including shared auto, which is often overloaded, tum-tum, and maxi-cab. These were the major reasons behind KSRTC to create city bus infrastructure in order to provide mobility solutions to smaller cities and towns.

Key dates

City bus services project started by Karnataka State Road Transport Corporation in Feb-2011. In 2015 the city buses project diversified to 10 cities and thereafter project is now extended in 18 cities in a phased manner.



Situation before city bus service initiative

Main focus

Main focus of this project was to create an organized and effective public mass transport system through buses in medium and small towns /cities which would bring affordable, accessible, efficient and absolute choice of transport mode to citizens. Increase in mass public transport share and decrease in use of personalized medium of transport would contribute in reduction of carbon emissions and ensure environment protection. Further, last mile connectivity for seamless travel was one of the focal points.

Mobilization of resources

For this project, buses were inducted under JnNURM-II/ Amrut Scheme as per the funding norms. In total 487 buses were funded under JnNURM project. Details of funds released are provided as below:

Budgetary allocation (Rs. in crore)			
Year	Government of India	Government of Karnataka	Total
2014-15	55.54	6.93	62.47
2015-16	8.64	1.08	9.72
2016-17	-	27.97	27.97
2017-18	-	1.67	1.67
2018-19	-	6.72	6.72

Process

A part from KSRTC, various agencies played important role for implementing the project. Municipal authorities of respective urban local bodies constructed bus shelters and its maintenance also went to them. Monitoring and Evaluation of consultants were done through surveying customer satisfaction level and analyzing bus operations for further deployment of services. Extensive public outreach programme was done by the Media. Last but most importantly the public, both commuters and non-commuters were involved for assessment of implementation and for business re-engineering. Public contact meetings for identifying their needs & feedback were organised by the Authority. Since the buses were seen as a threat to Para-transit modes, auto-rickshaw unions went on strike in the cities demanding to withdraw city buses from the cities. In this regard, KSRTC with the assistance of the local police streamlined the operations.



Proposed bus route at Tumkur city

Wherever there were more than one bus station in a city i.e., on in the city core area and the other in the city fringe areas (Moffussil), last mile connectivity has been ensured through the initiative. Seamless travel through inter bus connectivity services, with more frequencies has been ensured. Combo Pass Extension or Single Pass has allowed travel in moffusil and city bus services in a seamless manner.



KSRTC bus



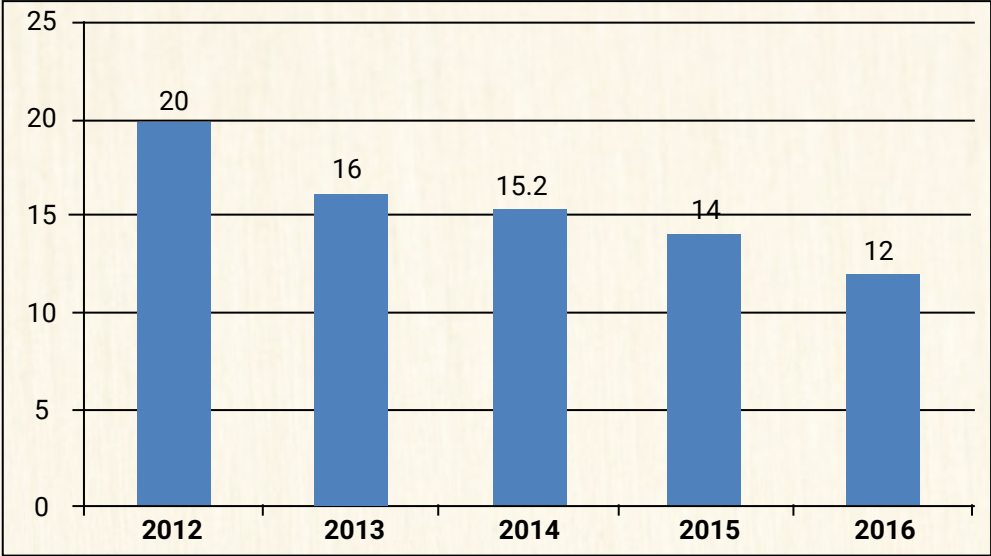
Interior of KSRTC bus

KSRTC has always ensured the travelers with reliability of service by following time schedule, safety; customized city buses with unique design and colour scheme, wide doors, sufficient standing space, LED boards, GPS based next stop announcement system, with adequate frequency. Even drivers and conductors were identified from KSRTC pool and imparted proper training and orientation for city bus services, where operating to fixed time schedule is critical. Value additions to city bus services in terms of intelligent transport system, bus announcement system, information dissemination through display boards, SMS, commuter portal, mobile app etc. helped KSRTC to expand its forte and attract commuters.



Central monitoring station

Regarding public bike sharing, active participation of KSRTC with city administration of Mysore has ensured last mile connectivity. They were engaged in giving inputs to the agencies, as to where the cycling docking stations are to be laid down, in order to connect the bus commuters with cycles. KSRTC launched for the first time Open Data Policy in Mysore, where the Authority is disseminating the bus information in real time to app developers, who would develop integrated trip planners. Mysore City passenger information boards for real time information are also deployed at City Railway Station. All this would help in reduction in passenger wait time.

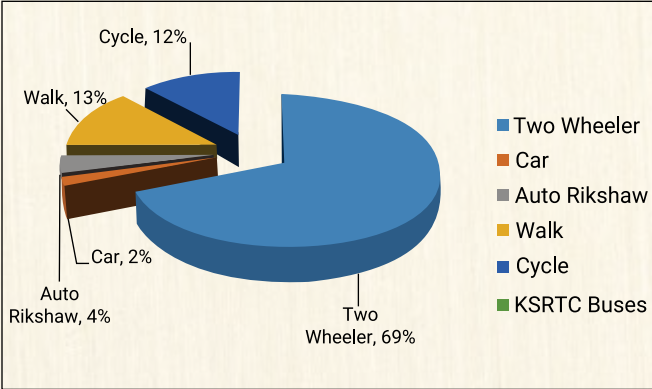


Passenger wait time (in minutes)

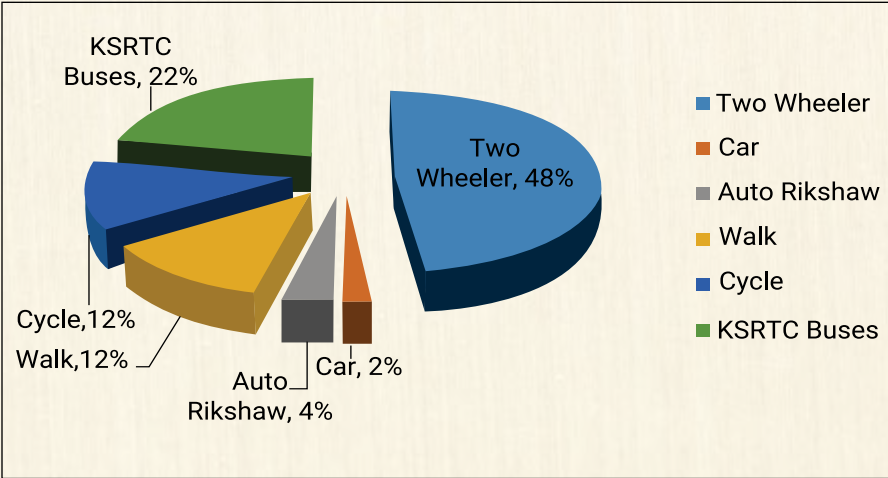
Sl. no.	City	Current Schedule	Trips	Schedule Kilometers	Intial Ridership	Current Ridership	Population (In Lakhs)	Passenger per Bus (Intial)	Passenger per Bus (Present)	KMs/ Bus/ Day	Population served within 400 mts. from Bus Stop	Bus Route length/ Sq Km area
1	Ramanagara	20	206	5690	9874	11997	1.01	483	600	285	9238	4.44
2	Tumkur	48	996	8730	8934	32867	3.06	993	915	182	25307	12.87
3	Kolar	13	156	3089	3263	5686	1.39	326	437	238	4378	9.99
4	KGF	11	164	2620	3571	5914	1.43	595	538	238	4553	3.55
5	Chikkaballapura	8	70	2470	3500	4153	0.64	700	685	309	3198	8.07
6	Mysuru	436	6269	100495	138699	316342	9.15	525	726	230	243583	7.9
7	Mandya	20	40	5842	3947	12248	1.38	359	612	292	9431	16.45
8	Chamarajanagara	5	96	1070	4820	2227	0.71	278	445	214	1715	4.44
9	Hassan	32	598	5544	5524	13820	1.55	478	432	173	10641	8.24
10	Chikkamagaluru	9	116	2498	2134	7448	1.18	427	828	278	5735	5.45
11	Mangaluru	44	414	10301	2539	17444	4.99	363	396	234	13432	8.66
12	Udupi	18	252	3841.2	6875	7733	1.48	336	430	213	5954	7.98
13	Davangere	53	784	9996	8306	40613	4.35	378	766	189	31272	18.77
14	Chitradurga	21	334	3491	7895	8596	1.49	311	409	166	6619	4.89
15	Shimoga	32	390	6532	12458	15158	3.35	299	474	204	11672	8.98
16	Bhadravathi	16	190	3102	5878	7786	1.57	420	487	194	5995	7.88
	Total	786	11075	175311.2	228217	510029	38.73	7271	9180	223	392723	

Bus services in different cities

KSRTC appointed M/s Inter Continental Technocrats Private Limited, the monitoring and Evaluation Consultants, to assess the performance of ITSCB2 enabled city bus services in Mysore. The consultants have carried out the commuters' survey in February 2018. The survey results obtained through a survey of more than 2000 commuters, viz., commuter satisfaction level on bus services with bus arrival information at bus stops is at 93%, accuracy of information provided through ITS enables city bus services is 90%, punctuality: 83%, consumer's believe on KSRTC buses 84.3%, travelling time 84.6%, bus fare 86.2%, availability of seats 85.4%, cleanliness 86.0%, behavior of conductor and driver 83.1%, security in bus 83.6%, driver stopping at place earmarked for bus stops 81.9%, identification of particular route bus 87.3%, wheelchair accessibility 74.9%, driving quality 85.2%, IBD board information 88.9%, In-Bus-Announcement 90.3%, security satisfaction of female passengers in bus 88.5%.



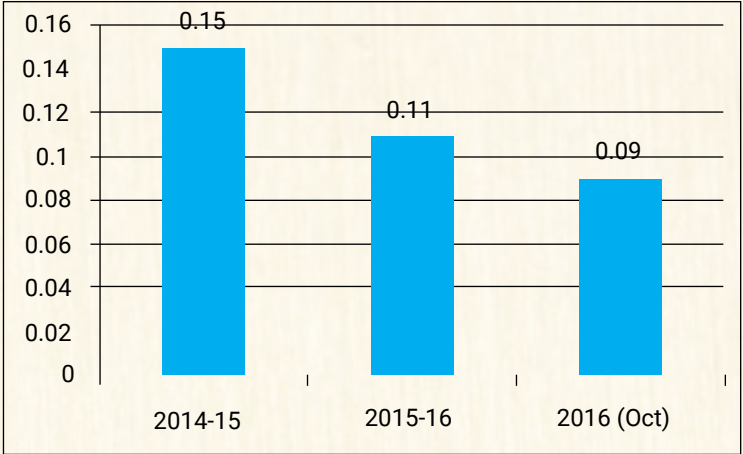
Modal share before introduction of bus service



Modal share after introduction of bus service

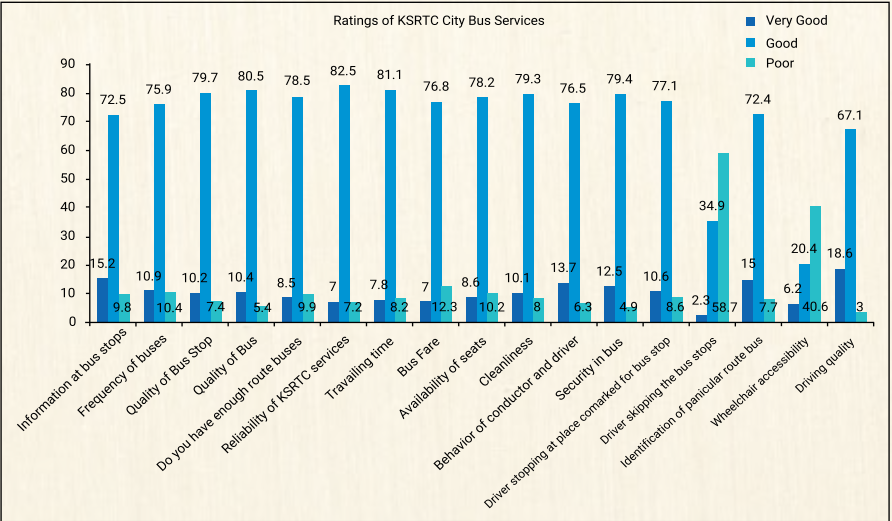
Sustainability

Regarding sustainability, this initiative has made a step forward towards environmental sustainability in urban environment. Consultants from Ministry for Housing & Urban Affairs (MoHUA) visited Mysore and assessed the environmental benefits of introducing ITS enabled city bus services in Mysore. They have assessed the direct and indirect reduction in carbon footprints because of introduction of ITS enabled city bus services in Mysore city. It is estimated that around 112103 tons of carbon dioxide emissions will be reduced by 2023.

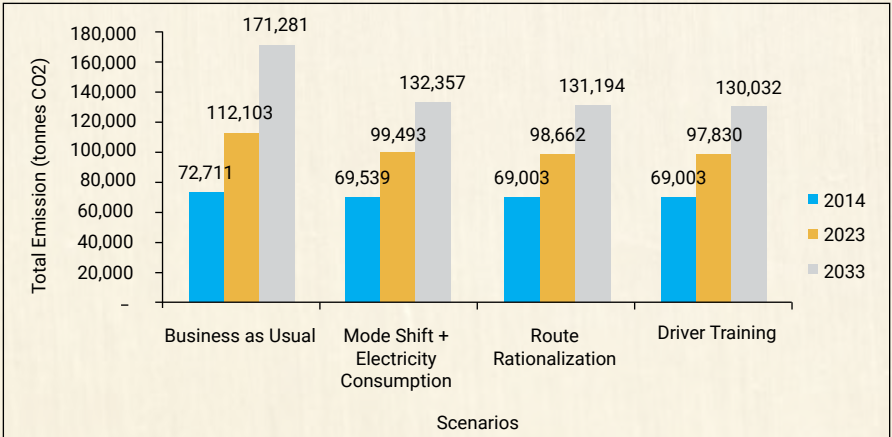


Rate of accidents (per lakh kms)

After introduction of bus service, annual ridership increased by 11.9% in 2017-18, compared to baseline year's annual ridership in 2012-13 and 16% of Non-KSRTC commuters have shifted to KSRTC due to ITS implementation in city bus services (1.7% of annual ridership accounts purely due to ITS implementation in city bus services). Average Commuter Waiting Time has reduced to 12.43 minutes in Feb-2018 as compared with 20.10 in April 2012 and 15.16 in Feb 2015.



Consumer feedback for KSRTC bus service



Reduction in carbon emission

Transferability

KSRTC has pioneered in introduction of city bus services in medium and small cities with 9 buses at Tumkur city in February 2011 in India. This initiative has changed the urban public transport scenario in the country and was the basic reason contributing to the formation of urban transport policy of the Government of India for providing city bus services in medium and small cities.

Initiatives and the methodology of introduction of city services and learnings accrued from this can be replicated for taking up similar organized city bus services in other Indian cities. Success of this has led to plan bus services in other 30 cities of Karnataka. The semi-floor bus design engineered and deployed by KSRTC has been recognized by the Ministry of Housing & Urban Affairs, Government of India, as a model for other cities to replicate.

Lesson learnt

Regarding lessons from this project, it is to state that proper project preparation in terms of route planning, bus design, participatory processes, fare fixation, revenue model and

best practices in operation and maintenance are considered very essential for this kind of a programme.

Media references

Sampling of Global Case Studies Highlighting Innovative Approaches to Sustainability in Urban Areas has been published by World Bank Group.

“Santos, Valerie; Gashi, Drilon; Armendaris, Fernando. 2015. What Makes a Sustainable City? : Sampling of Global Case Studies Highlighting Innovative Approaches to Sustainability in Urban Areas. World Bank, Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/23580> License: CC BY 3.0 IGO.”

National Media Meet was organised in February 2017 to demonstrate the successful functioning of city buses which were ITS enabled in Mysore city. The Times of India – Bangalore; the Indian Express – Delhi; The New Indian Express- Bhubaneswar; the Dainik Bhaskar – Bhopal; the Dainik Jagran – Chandigarh; the Rajasthan Patrika – Indore; the Haribhoomi – Naya Raipur and the Hindustan Times – Delhi representatives interacted with the public and covered the event.

<p>Before deployment of the project, set of questions that were before the Authority were:</p> <ul style="list-style-type: none">• Whether sustained city bus operation can be introduced in the cities having population of 3 or below 3 lakhs?• If so, can the city operations be viable and can they generate sufficient revenue to take care of operation, maintenance and depreciation costs?• Considering the constraints on capital expenditure, which has to be borne by the operator (KSRTC) itself, what minimum configuration of components in the city buses can be put together, so as to optimize capital costs?• Whether add-ons like destination sign boards and next stop announcement systems, which lead to additional costs, would be good value for money and would promote and encourage modal shift to public transport?• To what extent the provisions of Urban Bus Body Code can be incorporated in such	<p>city buses required for Tier-II cities?</p> <ul style="list-style-type: none">• City Buses can be taken only for few high density routes in these cities. What should be the methodology of route identification?• What should be the frequency of the city bus operations and how can the bus scheduling be taken up?• What is the extent of need and necessity to which infrastructure from the local Municipal Corporation would be necessary, particularly in setting up the bus shelters and bus stop signages ?• Estimating how many number of city buses that may be required for city bus operations - number of city buses less than the optimum would be insufficient for modal shift to public transport, and number more than optimum may lead to increased cost of operations, making the project unviable.
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<p>ITS: An Intelligent Transportation System (ITS) is an advanced application which, without embodying intelligence as such, aims to provide innovative services relating to different modes of transport and traffic management and enable users to be better informed and make safer, more coordinated, and ‘smarter’ use of transport networks. The application</p>	<p>of Intelligent Transport Systems (ITS) in city bus systems helps agencies to improve services by improving the reliability and efficiency of operations. Through data analysis, agencies can provide better information to passengers, improve in-house resource productivity and take concrete decisions for overall operations and management.</p>
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City bus service: A dream comes true for citizens

Good response from people; dozen buses to be added soon

HASSAN: The city bus service was formally launched in the city by plying three pairs of city buses on Friday. There is very good response from citizens to the new facility.

At 6 am, the pooja was offered to six buses in front of the new bus stand and started operating three buses in the opposite direction. While three buses started from Dasarakoppal side, another three buses rolled out from Channapatna Bypass side.

The people who had no imagination that those buses were city buses, hesitated to board. The residents of Dasarakoppal were questioning among self that why those buses were plying in their locality. Seeing the electronic sign boards, a few called those buses as 'Computer buses'. A lady who travels to Industrial Area from Dasarakoppal told *Deccan Herald* that earlier she used to leave house at least 30 minutes in advance.

With the introduction of city bus service now she gets buses once in ten minutes. "I



NEW BEGINNING: Citizens board the city buses which were started in Hassan on Friday. DH PHOTO

can spend some more time with my family members", she added. The engineering students have also welcomed

introduction of city buses in the city.

Divisional Controller Basavaraj said he along with

other officials of KSRTC travelled in the buses for some time. There is very good response from the citizens.

Twelve more buses would be introduced on two other routes shortly, he noted. **DH News Service**

Karnataka State Road Transport Corporation

The Karnataka State Road Transport Corporation (KSRTC) is a state-owned road transportation company in the state of Karnataka in India. In order to cater to the transport needs of the travelling public of the then state of Mysore, Mysore Government Road Transport Department (MGRTD) was inaugurated with 120 buses on 12th September 1948. The State Transport, which was being administered as a Department of the Government of Mysore was subsequently converted into an independent Corporation under Section 3 of the Road Transport Corporation Act, 1950 on 1st of August 1961.

KSRTC has its corporate office at Bangalore. Presently, it covers seventeen Districts in

the State under its operational jurisdiction. There are totally 17 Divisions - 16 operating Divisions and 1 bus station division, 84 Depots, 2 Regional Workshops, 1 Central Training Institute, 4 Regional Training Institutes, 1 Printing Press and 1 Hospital. KSRTC has a workforce of about 38669 employees. It operates on an average 29.25 lakh kms daily with a fleet size of 8729 vehicles and earns traffic revenue of Rs. 973.37 lakh daily by catering to 29.57 lakh passengers on an average. It stands 5th amongst STUs in the nation by size. It also operates to the neighboring states of Maharashtra, Andhra Pradesh, Telangana, Tamil Nadu, Puducherry, Goa and Kerala.

AWARD PHOTOGRAPH



City Bus Services at Tier II and III Cities & Towns by Karnataka State Road Transport Corporation



URBAN TRANSPORT

2011-2018

YEAR 2017-18

SEAMLESS TRANSPORT by Kochi Metro Rail Limited

A Metro Rail corridor has been implemented by Kochi Metro Rail Limited (KMRL) to address the increasing travel demand of Kochi city, connecting the two satellite towns - Aluva at north-east and Petta at south-east (25.6 Km), as these two radials are originating from the Kochi city centre. KMRL is working closely with Cochin Smart City Mission Ltd., Cochin Municipal Corporation and other stakeholders. Along with the same, KMRL has taken up the mantle to resolve the congestion woes of the city due to rapid urbanization. KMRL as the

interim Metropolitan Transport Authority (MTA) of Kochi, has imbibed the spirit of National Urban Transport Policy (NUTP) and taken it upon itself to achieve the vision of **seamless transport for Kochi by integrating all modes of Transportation among land, rail and water**. The integration is planned at four levels, institutional, physical, information and fare level integrations. The objective is to promote public transport and bring the people back to the public transportation system, by offering a seamless, door-to-door transit experience.

INTRODUCTION AND RUNNING Bi-Cycling Sharing System in New Town, Kolkata by New Town Kolkata Development Authority

The vision for the scheme is to develop a digitally powered environment friendly means of public transport that is healthy, affordable and ensures an improved quality of life in the city's natural and built environment. Cycle sharing, mainly for short duration usage, is an efficient commuting option at local level. In an effort to reduce the number of vehicle trips

made in the city and the associated pollutant emissions, **a new cashless app based dock less cycle-sharing system 'PEDL'** was introduced by New Town Kolkata Development Authority (NKDA) all over New Town Kolkata within the framework of existing infrastructure in collaboration with a private partner.



Bi-cycle sharing system operational in the New Town, Kolkata



YEAR 2016-17

MITRA - INITIATIVES IN INTELLIGENT TRANSPORT SYSTEM at Mysuru, Karnataka by Karnataka State Road Transportation Corporation

Implementation of Intelligent Transport Systems (ITS) in Mysuru City is a pioneering effort by Karnataka State Road Transport Corporation (KSRTC), **aimed at accelerating modal shift** from personal use of vehicles to public transport system and to lower pollution levels by offering high-class city bus services through state-of-the-art technologies. To enhance

KSRTC's functioning, ITS project is implemented with functions like Real Time Passenger Information System. The Unique Selling Proposition (USP) of the project is to provide Expected Time of Arrival (ETA) and Expected Time of Departure (ETD) of buses in real time. This information is provided through SMS and Interactive Voice Response System

(IVRS). 193 nos. of Passenger Information Display Boards have been commissioned at 111 locations including bus shelters, bus stations, tourist places and prominent places, and mitra.ksrtc.in, the bilingual commuter portal provides host of information to commuters which include tracking the bus on GIS map, time table, route details, fare, KSRTC bus services etc. (MITRAKSRTC- Official app) is the mobile app, which provides valuable

features like journey planner, facility to track bus, women's safety feature, alert facility, time table, tourist information etc. Benefits due to ITS include discipline and efficiency in bus operations, reduction in passenger wait time, improvement in modal share of KSRTC, reduction in carbon emission. The return on investment has been highly encouraging as well with cost savings on introduction of the project estimated nearly Rs. 6 crore.



Intelligent transport system monitoring setup

YEAR 2015-16

GPS BASED INITIATIVES FOR TRANSPORT IMPROVEMENT By Bangalore Metropolitan Transport Corporation

Aiming at monitoring the operation and there by improving operational efficiency by increasing crew productivity, vehicle utilization and ensuring timely operation, **GPS based Vehicle Tracking System** has been introduced by Bangalore Metropolitan Transport Corporation. Further, Vehicle Tracking System aimed at providing real time information to commuters there by reducing uncertainty and anxiety was proposed. It was felt by the bus crew that it might cause difficulty in performing their duty and there were a lot of tampering issues wherein crew used to disconnect the devices which has been addressed by creating awareness among the crew. The GPS based Automatic Vehicle Locator is helpful in real time tracking the 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, which provide the bus arrival information like bus no., route, destination and ETA in both Kannada and English and establishing connection with Control and Command Centre. Cost recovery of the project has been done in the form of increased productivity and decreased operational cost due to increased operational efficiency. Installation of vehicle tracking unit has helped to monitor driving habits of drivers to improve driving profiles in order to reduce accidents.



Vehicle tracking unit installed in bus

PARKING SOLUTIONS by Bangalore Metropolitan Transport Corporation



Two and four wheeler parking

YEAR 2014-15

AHMEDABAD BUS RAPID TRANSIT SYSTEM – JANMARG by Ahmedabad Janmarg Limited

The trans-vision of Ahmedabad captioned, as ‘**Accessible Ahmedabad**’, was to **redesign the city structure and transport systems towards greater accessibility, efficient mobility and lower carbon future**. Here, the concept of Bus Rapid Transit System (BRTS) was to encourage more people on the public transit system, with which high quality service is delivered. With a total of 88.8 km of approved BRTS networks, currently 87 km is in operation with 144 bus stations in 13 routes with operation time between 6.00 AM and 11.30 PM daily. The buses run at a frequency of 2.5 to 4 minutes during peak hours and 6 minutes during off peak-hours. 235 buses are catering to more than 1.35 lakh passengers every day.

Ahmedabad Municipal Corporation (AMC) is the lead agency for planning and implementation of this system which has been sanctioned under the Jawaharlal Nehru Urban Renewal Mission (JnNURM) in 2 phases with 35% of the fund from the central government, 15% shared by the state government and the remaining 50% has been borne by AMC. There were ten PPP arrangements which Ahmedabad Janmarg has entered into to ensure efficient operations of Janmarg BRTS. Janmarg is the first full BRT system in India

operated as a closed system. It uses Integrated Transit Management System (ITMS) which includes transit signal management, smart card integration and passenger information system on the buses. The BRT network has connected important origins, destinations and transit points like Railway Stations, Regional Bus Terminals, University Areas, Industrial Areas, Residential and Commercial Hubs of the city. Total revenue collection through BRTS as on 2015 was about Rs 15.85 lakhs per day. The BRTS-Janmarg, within a short span, reflected positive impacts such as an increase in ridership (from 17, 315 in first month to 1,22,800 passengers per day in the Sixty Second month), increase in revenue (from Rs. 4,500 to Rs. 10,600 per bus per day), modal shift (shift of passengers from motor cycles, cars and 3-wheelers), dependable service / reliability (92% departures are on time, 78% of arrivals are on time), improvement in travel speed peak hour speed-26 kmph against 16-18 kmph of AMTS), improvement in the level of air pollution, decrease in accident rates etc. System wide impacts include relief from congestion, improved safety, maximization of the ridership serving the needs of the poor, providing opportunities for transit-oriented development / promoting compact city, and enabling integration with other modes.



Before images of the project





After images of the project



Prime Minister Shri Narendra Modi assessing the BRTS system (he was then the chief Minister of Gujarat)



New buses for the BRTS system



Children using the BRTS system

URBAN TRANSPORT PLANNING 'SITILINK' by Surat Municipal Corporation

Surat Bus Rapid Transit System named as 'Sitilink', is an initiative to develop a public transit system, operated as a closed system, planned and implemented as complete surface development with provisions for NMT (pedestrian pathways and cycle tracks). High capacity service with all A.C. buses is the distinct identity of the system. Out of 102 km network, 30 km was identified as phase 1 BRTS within which 12 km was the first water front BRTS to be implemented in India. As a part of this, recreational facilities like kiosks, gardens, children's play area, seatings, etc. were planned along both sides of the canal. Facilities in the project include State-of-Art bus stations, safe and secure bus stations with barrier free access through ramps, tactile blocks, railing, livable streets for people, high quality, safe and accessible pedestrian pathways streets for walking, seating, cycling and public transit along with private vehicles. Intelligent Transport System including PIS, GIS based vehicle-tracking system with a central control centre monitoring and off board ticketing system are major highlights of the system. 'S-connect', a feeder system has been integrated with BRTS for the last mile connectivity of the passengers. Single ticketing system with fare integration is developed to make travel convenient for the people of the city.



Provision of cycle tracks

Due to the project, monthly ridership have increased from 1.0 Lakh monthly to 1.6 Lakh, out of which 81% of BRTS users have shifted from 3-wheelers (shared auto- rickshaws), 5% from two wheelers, 3% from NMT and 1% from cars. Travel speed of Surat City Bus Service and other modes has increased to 24 kmph in peak hour as compared to 16-20 kmph before implementation of BRTS. Further major reduction in accidents on the corridor has been observed. Impacts on the system include relief from congestion, improved safety, maximization of the ridership serving the needs of the poor, providing opportunities for transit-oriented development/ promote compact city and enabling integration with other modes.

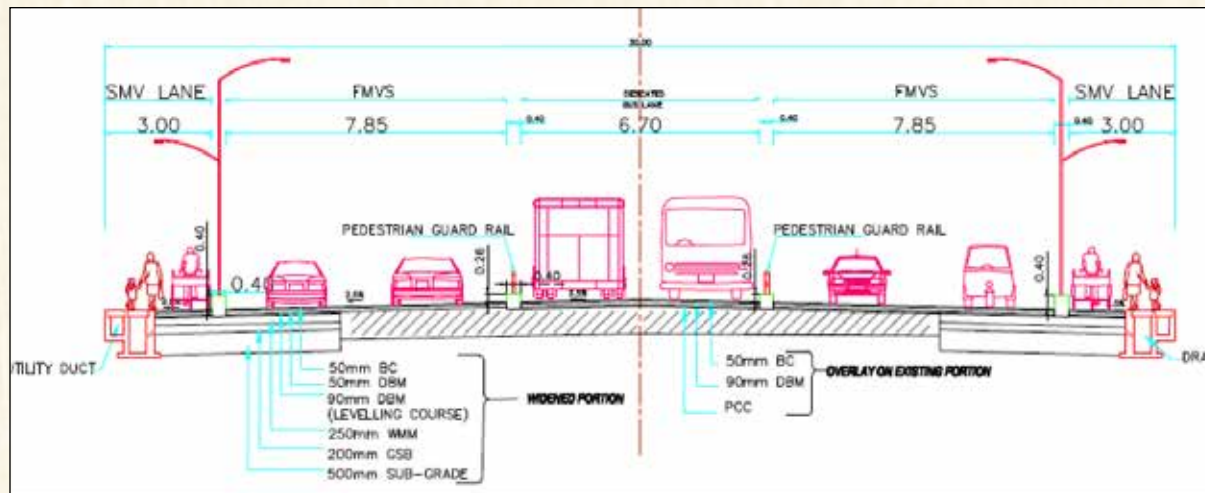
YEAR 2013-14

INTEGRATION OF CITY BUS OPERATION WITH BUS RAPID TRANSIT SYSTEM OF BHOPAL by Bhopal Municipal Corporation

The BRTS Bus operation on the BRT corridor has commenced from 27th Sept, 2013 as **'MY Bus' on Net-Cost Basis Contract through a private operator.** In this public private partnership model, operator is required to pay security deposit of 38% of the cost of buses deployed for respective cluster and give an average premium of Rs. 4000 per bus per month. Corporation in turn provides the basic support infrastructure and facilitates for the operations by creating infrastructure like depots, bus shelters, operational control mechanism etc. Vendors have been deployed by the Corporation to issue common passes and automatic fare collection. Operator is also responsible to operate & maintain the entire fleet & assets under the project and pay route authorization fees per bus per month. As on 2014, 185 numbers of 900 mm floor height buses & 20 numbers of AC 400 mm floor height buses are plying on 12 different approved routes of Bhopal city including BRTS route. Bhopal City Link Limited (BCLL) has contributed in fulfilling the public transport needs to a large extent of a city where in the past four decades, the population of the city has increased four times whereas the vehicles population has increased 87 times and the road length has increased by only five times. As on 2014, approx. 35,000-40,000 passengers per day are travelling in the 'My Bus' in the BRT corridor and 1.25 lakhs per day are travelling in all the routes of city bus services provided by BCLL. All the routes of the city have been designed in such a way that they cross at major intersections or overlap the BRT corridor on the major roads thereby integrating the City Bus Operations with Bus rapid Transit System of Bhopal. BCLL has ensured the financial sustainability of its operations by generating major share of revenue by alternative sources like advertising.



Aerial view of the BRT corridor



Road section showing the integrated BRT corridor

YEAR 2012-13

AHMEDNAGAR CITY TRANSPORT SERVICE by Ahmednagar Municipal Corporation

The Ahmednagar Municipal Corporation initiated and implemented Ahmednagar Municipal Transport Project on the principle of Build, Operate & Own (BOO), and appointed 'Prasanna Purple Mobility Solutions Pvt. Ltd.' (PPMSPL) Pune, as the Agent, who commissioned city bus services in Ahmednagar from 24th February, 2011. Two projects prior to Ahmednagar Municipal Transport project were closed down, one was in 2004 when Maharashtra State Road Transport Corporation (MSRTC) operated city bus services but due to sustained losses, MSRTC closed down operations. Second one was in January 2007 when Ahmednagar Municipal Corporation (AMC) appointed "Ahmednagar Pravasi & Maalvaahatuk Sanstha" as the operator who started city bus operations with a fleet of 15 buses. However; this too had to be closed down due to poor financial performance.

Thereafter the Ahmednagar Municipal Corporation along with PPMSPL, for the benefit of citizens residing in the city limit and adjacent areas started Ahmednagar Municipal Transport Project. The tenure of the contract between AMC and PPMSPL was of 10 years. The fleet of AMT project consists of 23 Ashok Leyland buses. Nearly 1000 trips

were operated per day. The total number of passengers carried were around 5,00,000 per month (about 16500 passengers per day). The number of passengers per bus per day was around 758. The average revenue generated per day per bus was around Rs.5473.

With implementation of the project, the citizens benefitted at large, students got the Concessional Smart Card (RFID Card) and Monthly/Quarterly/Annual RFID Passes for daily commuters were also issued and concessions in fare was provided to the blind and the handicapped. This initiative led to a significant reduction in air pollution. In order to determine and even to record the precise location, speed & time of the city buses plying on different routes of the city, GPS vehicle tracking units were fitted in all the city buses. Various reports were also generated like the Daily Travel Report, Vehicle Idle Report and the GPS Mileage report. This led to a reduction in the rising fleet expenses along with an increase in the fleet efficiency. As a result of the above efforts, at Ahmednagar bus service operated at a high level of operating efficiency with vehicle utilization at 95%, a bus to staff ratio of 5.74 and well maintenance cost/km.

YEAR 2011-12

CONSTRUCTION OF TRAFFIC TRANSIT & MANAGEMENT CENTRES by Bangalore Metropolitan Transport Corporation

Bangalore Metropolitan Transport Corporation (BMT) formulated a 'Vision Plan' under Jawaharlal Nehru National Urban Renewal Mission (JnNURM) with an outlay of Rs. 3000 crores spread over five years emphasizing development of urban transport infrastructure. The construction of **Traffic Transit Management Centres (TTMCs)** was part of this vision plan. TTMCs were focused on **enhancing efficiency of public transport through integration of different modes of travel**. BMT identified 10 TTMCs in the prime area of the Bangalore city for development under the plan. All the TTMCs were made operational by 4-12-2011. Each TTMC have 34 types of passenger amenities in the categories of minimum basic passenger facilities; health related facilities; civic amenities related facilities; tax payment centres and service provider kiosks, etc.; financial related facilities, transport related facilities, bus station for bus connectivity to different places, household requirement

facilities; and park and ride facilities. These buildings are state of the art passenger amenity centres with facilities such as bus terminal having bus bays, platforms, seating and lighting, public conveniences, information systems, safety & security, etc. Bus maintenance was ensured through maintenance bays, washing platform, bus parking, services & utilities, fuel filling stations, amenities for the crew, etc. Passenger amenities were made available such as Automated Teller Machines (ATMs), health centre, shopping, food court, Internet cafes, hygienic toilets, etc. The most benefited are the passengers who were earlier waiting for the buses on the road, can now wait in the modern bus station with the above said facilities. BMT had 2,84,620 square metres built up area out of which 2,55,000 square metres could be used for commercial purpose and would generate revenue of Rs. 24 crore per annum.





DISASTER PREPAREDNESS, MITIGATION AND REHABILITATION

2011 - 2019



YEAR 2015-16

DISASTER PREPAREDNESS – Grid Networking in Water Supply Management by Surat Municipal Corporation

Water Supply System of Surat City is dependent on surface water or River Tapti and the city used to face flood or similar conditions once in every four years. In order to supply at least lifeline supply in any eventuality, Surat Municipal Corporation (SMC) has developed water supply system with **GRID connectivity which connects waterworks, water distribution stations and pumping stations of water supply system**. As on date, mostly all waterworks 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 other water works or water distribution station. The department staffs are

also motivated thus to face any challenges in water supply.

In year 2001, dedicated energy efficiency cell was established which used to monitor the electricity consumption, conduct 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. 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 this part remained submerged in floodwater.

YEAR 2014-15

EARLY WARNING SYSTEM by Meteorological Centre, Dehradun

Generally Meteorological Centres do not issue advisories such as **Forecast of occurrences like landslides and postponement of religious yatras (Char Dham) etc.** **Meteorological Centre, Dehradun was the first to initiate such innovative advisories and location specific forecast**, which were non-existent before. Meteorological Centre had predicted well in advance extreme weather events that took the form of Kedarnath disaster in June 2013. Timely and accurate weather forecast and warning were given to the State Government and general public about the said disaster.

In the case of Uttarakhand, the heavy rainfall warnings were issued from 13-06-13 onwards. On 14-06-13, weather based Agro Bulletin warnings predicting heavy rains were issued in all the Agro-climatic zones of Uttarakhand. Farmers were advised not to apply chemical fertilizers and to make necessary arrangements for drainage of excess water. Weather forecast and warning were upgraded on 15-06-13 indicating very heavy rainfall with possibility of landslides. Uttarakhand Government was advised to postpone Char Dham Yatra. As a result of this kind of initiative, it has instilled a sense of confidence in the people about credibility of Weather Forecast/ Warning Systems.



Image of Uttarakhand after disaster









HOUSING, URBAN POVERTY & INFRASTRUCTURE

2018- 2019



YEAR 2018-19

PMAY-LIFE HOUSE CONSTRUCTION through Women Construction Group by Kudumbashree - State Poverty Eradication Mission

Kudumbashree Mission of Kerala identified construction of PMAY-LIFE houses as a potential to fulfill the desired objective of empowering women construction labourers and improving their quality of life by generating income and livelihood. It started formation of women construction groups and also provided women workers with on-the-job training at construction sites. Kudumbashree Mission with the help of CSR fund of HUDCO completed the training of first batch of 200 women in the year 2013. Currently around 2952 women have been trained from 477 house building teams- 60 Urban Groups and 417 Rural Groups, across 14 districts in the State.

Introduction

Pradhan Mantri Awas Yojana (PMAY) is an initiative by Government of India in which affordable housing will be provided to the urban poor including slum dwellers, with a target of building 20 million affordable houses by 31 March 2022. When the implementation of PMAY gained momentum, the demand for skilled labourers especially from the local market rose significantly, with demand for 38 lakh skilled and 50 lakh unskilled labourers. The Mission LIFE (Livelihood, Inclusion and Financial Empowerment) is envisaged as a one-time programme for wiping out the problem of lack of housing in Kerala among the poor and to develop a sustainable model for addressing the housing needs of the poorest of poor. **The mission aims at improving the quality of life within the next five years by not only providing houses and allied facilities to the landless and houseless, but also raising their living standards through skill building to enable them to take up livelihood activities.**

The demand for skilled workers increased dramatically in the past few years, resulting in huge gap for skilled labourers. Therefore, the need emerged to improve the skills of the construction workers through systematic and organized approach. Hence, Kudumbashree Mission (KM) came up with an idea of Poverty Alleviation through women empowerment with a challenge to improve the condition of women labourers in the construction sector.

KM as part of empowering women in self-employment, identified construction as a potential area for meeting the desired objectives and KM carried out detailed research at an existing women training model i.e, SEWA (Self Employed Women's Association) Nirman, Gujarat, to develop an appropriate mechanism to provide training and other system requirements to increase the income and improve the quality of life of such workers. Also, tapping the demand for skilled construction workers and professionals in the market, it started formation of women construction groups and provided training programmes at various levels. The main motive of the mission was to upgrade, diversify and certify the skills of the labourer in new technologies and emerging standards in the construction industry, providing women workers with on-the-job training at construction sites. Apart from this, it



Skilled women workers

also linked women workers to large-scale employment opportunities in public and private sectors and facilitated the need for state and national-level policies that enabled women to translate their training and skills into sustainable employment opportunities.

Background

Construction industry is considered as the second largest and one of the fast growing sectors. Many multinational companies are competing in this sector, by engaging themselves in large public sector and industrial projects. According to International Labour Organisation (ILO), construction jobs in most countries are undertaken exclusively by men. The GDP contribution of construction sector accounts for 7.74% (2016-17). Though women account for a significant proportion in construction works, they are usually seen as secondary / temporary workers with seldom opportunities for training, upward mobility, wage guarantees, fringe benefits and social protection. They are usually integrated to the bottom end of the industry with jobs like digging earth, mixing cement and carrying bricks. They are rarely found in skill trades such as masonry, carpentry, plumbing, electrical wiring works. Majority of women who join as unskilled workers would continue to remain as unskilled workers for their life period.



Screening process being carried out

Situation before Kudumbashree Mission: Earlier in Kerala, the wages paid to the semiskilled / skilled labourers were highest compared to other states in the country, forcing migration of workers from other states, grabbing the majority of work opportunities in this sector. Moreover, the industry was always dominated by men and penetrating to this dominated market is always a major concern. These poor women, even if qualified, while working in this industry, were forced as casual labourers with limited payments. They also faced certain challenges such as lack of required funds, modern tools, latest technology and support of a professional body and also workers did not get regular employment and were exploited in terms of daily wages.

Establishment of Kudumbashree Mission: KM as part of self-employment and empowering women in self employment, identified construction as a potential area for meeting the desired objectives. During August 2013, KM along with Housing and Urban Development Corporation Limited (HUDCO) initiated a project for Skill upgradation of women in Construction sector.

KM carried out detailed research to develop an appropriate mechanism to provide training and other system requirements to increase the income and improve the quality of life of such workers. Construction sector across the State of Kerala required a large number of skilled manpower.

Key dates

The first batch of women construction workers was trained in the year 2013-2014, with the help of the CSR fund of HUDCO, subsequently leading to the formation of a construction unit named Kudumbashree Constructions in the year 2015. Considering the excellent contribution of the group so formed, in Construction sector, the Government issued order, enabling the Government departments and other agencies to engage the construction group for their activities without tender process in the year 2018. The growth of the mission is significant all through the years and is still progressing.

Main focus

Main focus of KM was formation of women construction group for taking up house construction for PMAY (Urban)-LIFE beneficiaries. It also focused on the formation of enterprise group and its accreditation, providing sustainability and income generation to the women labourers.



Women Construction Workers

Establishment of priorities

- Enhance female labour participation rates of Kerala by finding employment opportunities for women in construction sector and facilitate percolation of benefits on newly established infrastructure projects of the state.
- Creating women and labour friendly environment in Kerala by complying to all labour norms and implementing women and labour welfare programs.
- To ensure equality among women construction workers and promote women friendly employment culture.
- Empowering women; converting and transforming them from unskilled to skilled workers, catering to the demand-supply gap (shortage of workers/ materials) and maintain gender equality.

Mobilization of resources

KM along with HUDCO initiated the project and completed the training of the first batch of 200 women with the help of CSR fund of HUDCO. The training was provided through reputed Government agencies such as Nirmiti Kendra, Costford, Maithiri, Pinarayi Industrial Cooperative Society, etc., and KITCO (Kerala Industrial and Technical Consultancy Organisation Ltd.), which provided engineers and supervisors for training, along with Archana Women Centre, which provided masons for guiding the trainees. The training cost involved in this project was funded through State plan fund.

Process

This project was first implemented at Ernakulam, under the supervision of District Mission-Ernakulam. They identified 130 women consisting of 40 Civil engineering graduates, 30 Civil diploma holders and ITI pass outs and around 60 masons.

After successful completion of training, these women were engaged with various construction activities. Among these members, a group of 8 women formed a group named as 'Kudumbashree Constructions', comprising of engineer and supervisors. These members gained technical competency to take up construction activities. During 2015, Kudumbashree Constructions functioning at Ernakulam received a work order from State Tribal Department for constructing 70 houses at Edakattuvayal Panchayat under Tribal project. The group took this opportunity and was able to complete all the houses. Along with this project, the group undertook many construction projects which helped them to increase their turnover.

Turnover for the financial years and subsequent achievements

S.No.	Financial year	Turnover (in Rupees)	Achievements
1	2014 - 15	22,50,000	<ul style="list-style-type: none"> First batch trained -200 women Construction of 74 houses of Tribal Department, GoK
2	2015 - 16	31,40,000	64 construction units with 568 members were formed which were engaged to Open Defecation Free (ODF) Project.
3	2016 - 17	90,00,000	Construction project got recognition as one of the best practices under MoRD

Results achieved

Currently around 2952 women have been trained from 477 house building team across 14 districts. Thus, there are 60 Urban groups and 417 Rural Groups in the State.

Statistics of women members engaged in construction (since 2014)

Total no. of groups	Urban groups	Rural Groups	Total Kudumbashree members engaged
477	60	417	2952

Progress of Kudumbashree Mission till now

S. No	Stakeholders	Scaling Up Process	Progress
1	PMAY (URBAN & RURAL)	Availing house construction projects	191 Houses
2	MISSION LIFE	House Construction Projects and also providing Building materials	78 Houses

3	ASRAYA	Destitute Rehabilitation Project - Constructing Houses	11 Houses
4	SNEEHAVEEDU	Constructing houses for destitute – project of Panchayat	3 Houses
5	Social Security mission	Construction and Renovation works of Anganwadis	Discussion in Progress
6	SC/ ST department	House Construction projects	Completed 72 houses
7	Live Stock department	Construction of Cowshed, Farms.	Discussion in progress
8	Panchayats	Construction of Roads, Well recharging and Toilets.	Work in progress
9	MGNREGA	Material Supply and Construction works of Panchayats	Received Government Order
10	Government / Private Schools	construction and Renovation	Canteen construction work of school.

Apart from the above, the intangible benefits include gender equality in labour and wage, increased employment opportunities, sense of ownership among women, sustainable livelihood – poor women getting regular works in construction sector, holistic development approach – women’s participation in local development works and better work environment for the women. This mission also proved that women are ready to take up any entrepreneurship like men if they are motivated in a proper way.

Progress statistics (2018-19)

S. No.	Particulars	Total
1	Total Amount of construction work allotted (in Rs.)	3,50,91,397
2	Total Revenue received till date (in Rs.)	2,72,49,897 (77.60%)
3	Number of groups	70
4	Number of Members	500
5	Total Income days generated	2371

All members are able to generate an amount of Rs. 750/- per day.

Some of the projects initiated through convergence

- **Construction of individual Houses** of Tribal Rehabilitation Mission in the State.
- **Construction of LIFE houses** (Kollam -1 House, Pathanamthitta – 1 House, Alappuzha -14 House, Kottayam – 1 House, Idukki – 1 house, Ernakulam – 7 Houses, Malappuram – 2 Houses, Kasargod – 3 houses)
- **Construction of Asraya Houses** (Trivandrum – 1 House, Pathanamthitta – 3 Houses, Alappuzha – 1 House, Thrissur – 1 house)
- **Construction of PMAY houses** (Kottayam -1 House, Kollam – 25 Houses, Malappuram - 150, Kozhikode – 2, Ernakulam -2, Thrissur – 5, Pathanamthitta – 2, Kannur -3, Wayanad -1)

Sustainability

Kudumbashree could facilitate the linkage of the trained women labour pool to other proposed construction projects under Government sponsored schemes through issuing



House constructed by Kudumbashree Mission within 40 days

Government orders and sanctions. Kudumbashree aimed at building tie-ups with builders and contractors in the private sector as well. Hence through linkage with formal system, sustainable employment generation has been ensured.

Social and Financial Empowerment: Through Kudumbashree initiative, women in construction sector are breaking down barriers and challenging misconceptions about the construction field. They are proving that there is a place for smart, successful women in the construction field. Through this the society is able to:

- Promote ‘can do’ and ‘can win’ attitudes among women
- Promote women’s achievements through success stories about projects managed and supported by women
- This will help to change the attitude of clients towards women’s performance.
- Unemployed women are ready to accept challenges to meet their provisional needs to increase the status of family by earning income and become economically independent.

Cultural, Environmental and Institutional Impact: Several stereotypes exist about women and houses. Women’s primary role is considered to be that of child bearers and home makers. The differentiation in work between men and women on building sites occurs on the grounds of what is considered appropriate for men and women, not on the basis of capabilities. The treatment of both men and women is not equal and this is particularly so in the construction sector. But women enter into construction field through all women construction group organized by Kudumbashree and they do all work related to construction. All-women construction group in Kerala challenges the male-dominated industry.

The project also resulted in women friendly sustainable work environment. Through skill up-gradation, the labourers are better aware about the risk involved in the field and could take precautions to safeguard the environment which has resulted in a better work environment.

Moreover, the hidden entrepreneurial potential of unemployed women have gradually been changing due to the impact of training and helped in enhancing the risk bearing capacity and decision making power. The empowerment of unemployed women is possible through their change in attitude towards self employment and self confidence which helps them to strongly mould their individuality.

Transferability and Lessons learned

This project can be replicated anywhere in India, since there is a huge demand for skilled labour in construction sector and the poor women are still there without any job. Further, women are ready to take up any entrepreneurship like men, if they are sensitized and motivated in a proper way.

Workers at present do not get employment throughout but also get exploited in terms of daily wages. This scattered talent requires to be organized as one group thus could position themselves significantly in the construction industry. There are many trained workers who are keen on taking up contract work independently. However, due to lack of modern tools and equipment, they may not be able to execute high quality job. A centralized tools and equipment library providing equipment to its members on rental basis at a reasonable cost would help these workers earn self employment to a great extent.



Women labourers at site

Some responses from the trained women labourers

“There were a few days of classroom teaching, where we were taught everything about the construction process and skills. Then we were straight away taken to the site, where we were asked to build a house. It was not an easy task, but we were determined and soon it became a pleasure to see the work progress”

“As days went by and the house took shape, those who laughed at us came to support us and that was a big game-changer.”

Inspired by these enterprising women, and anticipating a huge shortage of labour force in near future because of determined government campaigns of mass housing (LIFE project of government of Kerala), it was decided to impart training to women in construction sector so as to form labour contract groups of women entrepreneurs who can take up construction of houses of poor and needy, in addition to taking up bigger projects.

To ensure quality, Kudumbashree is closely reviewing every phase of the construction. Helmets, identity cards and uniforms, along with a stipend, are being provided to each member. Members who construct a house would be considered ‘mini contractors’. The agency concerned would provide the assistance and expert advice at the construction stage. The members would be equipped in all the phases of construction, including preparation of plan in the initial phase, its approval from local bodies and the allotment

of house number after completion. This project would also result in women friendly sustainable work environment and would help women to excel in all fields like men, including construction sector.

Kudumbashree Mission (KM)

Kudumbashree is the poverty eradication and women empowerment programme implemented by the State Poverty Eradication Mission (SPEM) of the Government of Kerala. Kudumbashree was set up in 1997, in the context of the devolution of powers to the Panchayat Raj Institutions (PRIs) in Kerala, and the Peoples’ Plan Campaign, which attempted to draw up the Ninth Plan of the local governments from below through the PRIs.

In 2011, the Ministry of Rural Development (MoRD), Government of India recognised Kudumbashree as the State Rural Livelihoods Mission (SRLM) under the National Rural Livelihoods Mission (NRLM). Kudumbashree is essentially a community network that covers the entire State of Kerala. While the community network is formed around the central themes of poverty eradication and women empowerment, its main features include democratic leadership, and support structures formed from the ‘Kudumbashree family’.



UNIVERSAL COVERAGE OF URBAN PIPED WATER SUPPLY

by Housing and Urban Development Department, Government of Odisha

Housing and Urban Development Department (HUDD), Government of Odisha decided to implement the project of universal coverage of piped water supply spreading across all the streets, wards and the ULBs of the state of Odisha. This universal coverage of piped water supply project was aimed to add 5942 kms of distribution network, connecting 4.8 lakh households and benefitting 50 lakh urban population. There was massive community participation and innovative use of technology in project monitoring, which resulted in achievement of 75% coverage of piped water supply in ULBs and 100% coverage in the wards in just 13 months, boosting the quality of life for all, especially the urban poor.

Introduction

Majority of cities and towns in Odisha had poor quantity of water supply with low coverage of piped water. As on 2014-15, 43% Urban Local Bodies (ULBs) had deficient water supply quantity, i.e., receiving less than 70 liters per capita per day (lpcd) and just 55% wards were fully covered. AMRUT scheme which was launched in June 2015 sought to provide tap water supply to every household. However, only 9 ULBs of Odisha were selected under AMRUT scheme. For the remaining 103 ULBs, the Housing and Urban Development Department (HUDD), **Government of Odisha decided to launch the piped water supply project in mission mode to cover all streets, all wards and all ULBs of Odisha.**

The task of implementing the project was given to Public Health Engineering Organisation (PHEO). There was massive community participation and innovative use of technology in project monitoring, which resulted in achievement of 75% coverage of piped water supply in ULB's and 100% coverage in wards in just 13 months, boosting the quality of life for all, especially the urban poor.



Launching of the project

Background

Before the initiation of the piped water supply project, the urban Odisha was suffering from low-piped water coverage and low water supply quantity. Further, there were several operational problems in urban water supply such as high non-revenue water, i.e., water supply generating no revenue; leakages in pipelines leading to water loss; unmetered household water supply connections and large number of illegal connections as it was more convenient for citizens and/ or they did not have the capital to obtain legal connections.

The universal coverage of piped water supply project was aimed to add 5942 kms of distribution network, connecting 4.8 lakh households and benefitting 50 lakh urban population. Further, issues such as absence of water metering, undetected leakages and leakages leading to contamination and water borne diseases were thought to be addressed, bringing substantial benefits to all sections of the society.

Key dates

On 21st September 2017, Action Plans were approved for the years 2017-18 and 2018-19 by the Government of Odisha. Within a month, i.e, on 20th October 2017, projects in all Urban Local Bodies were launched by the Hon'ble Chief Minister of Odisha. Finally on 24th November 2018, 500 projects were completed covering 84 ULB's, commissioned and dedicated by Hon'ble Chief Minister of Odisha.

Main focus

The main focus of the project was the universal coverage of piped water supply in all streets, all wards and all 112 ULBs on saturation mode (covers all areas of ULB including all slums). It also focused on effective convergence of funds from various State and National Schemes/ programmes like State Plan, AMRUT, District Mineral Foundation, UIDSSMT, etc.

It focused on extensive involvement and participation of citizens from concept to commissioning including an active role in sustainable water management and also the third party monitoring for quantity measurement and bill certification ensuring accountability. The target was to cover beneficiaries totaling 70 lakh urban denizens. Moreover, the focus was to effectively utilize technology to monitor progress of projects and service delivery related parameters (two frugal web-based tools were developed by Housing & Urban Development Department).

Establishment of priorities

- Increasing the piped water supply coverage to all 112 ULBs and ensuring 100% piped water coverage in all streets and wards, including slums.
- Increasing quantity of water supply to the minimum prescribed limit of 70 lpcd within 2 years.
- Addressing procedural hurdles, absence of water metering, undetected leakages, leakages leading to contamination and water borne diseases and operational problems in implementation.
- Mobilization of funds from various sources.



Water supply project

Mobilization of resources:

Financial resource: The investment in water supply has increased by almost 20 times from Rs. 190 crores in 2014-15 to Rs. 3596 crores in 2018-19. This huge mobilization of resources was achieved due to the convergence of funds from the State Government Plan, AMRUT, District Mineral Foundation (DMF), Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT), deposits and CSR funding.

Technical resource: Multiple organisations were engaged to ensure quality and timely execution of the project, including:

- PMU – H&UDD (Deloitte) and PMU – PHEO were entrusted with strategy, operations, monitoring and evaluation of the project.
- Engineers India Limited (EIL) was appointed as Project Development & Management Consultant (PDMC) for selected projects.

The project also included innovative use of technology for planning and monitoring. PMU – H&UDD (Deloitte) facilitated the department in developing a frugal and innovative web based tools – Smart Dashboard Information Management System (SWIMS) and MoPRIDE – for real time monitoring of projects and measurement of key performance indicators related to water supply.

Human resource: The PHEO implemented the project in mission mode maintaining digitized records and reporting. The Secretary HUDD, Chief Secretary as well as the Chief Minister were constantly monitoring the implementation status.

- 400 Public health and urban development officials were trained on project and contract management, DPR preparation, etc. PHEO recruited 34 Assistant Executive Engineers.
- Independent Review and Monitoring Authority was appointed for third party inspection of AMRUT projects, and
- Third party agency was appointed for quantity survey of works under State Plan.

Process

As the project was implemented on a massive scale, several procedural hurdles were needed to be addressed that time.



Construction of water tanks

To address the challenges of identification of water supply projects, paucity of funds and operational problems like water leakage, non-metering of water supply and illegal water connections, the following steps were taken:

Community Participation

- The involvement of local public in identification of water supply requirements specific to the ULB was encouraged. The list of projects were discussed in their respective councils involving all the public representatives, passed council resolutions and submitted to the Government for approval.
- WATSAN (Water and Sanitation) Committees were formed and ward level water monitors were appointed for all 1980 wards in urban Odisha involving local SHGs/ Biju Yuva Bahini/ NGOs. The WATSAN Committees were involved in identifying the beneficiaries for new household water supply connections. The objective was to transfer the water distribution at ward level from PHEO to the community. The next step was to handover the O & M to community so that they can conduct water audit and involve the community in water metering at ward and consumer levels.
- Procurement and bid process management – Standardization of BOQs and corresponding costing, clubbing of DPRs, bidders meet involving participation of corporate firms and national & international level players, standardization of evaluation, issue of technical and commercial queries and composite administrative approvals were some of the best practices adopted during execution of the project.
- ‘Jala Jogan Melas’ or special camps have been held to facilitate connection of piped water supply to households. The Melas ensured 100% coverage of house connections and door-to-door campaigning to sensitize the citizens about the scheme and its benefits and to ensure timely complaint redressal.

Incentives to general public

- In order to encourage the general public to obtain household connections, a special incentive of waiver of road cutting charges was given with a savings of Rs. 12,000 per house connection by the consumers totaling an exemption of about Rs. 360 crores.
- The regular upfront household water supply connection fees of Rs. 3600 was allowed to be paid @ Rs. 100 in 36 equal monthly installments.

Planning tools, methods and benchmarks used

- Monitoring and third party verification - Kick off meetings and circle level meetings were conducted on regular basis to fast-track execution of work. The third party verification, introduced to ensure time-bound project implementation, was also responsible for work measurement, verification of safety standards, quality checks and certification of bills.
- Outcome Certification – Based on outcome indicators such as geographical and household coverage, equity in distribution, adequacy and duration of water supply, completed projects were checked and certified with respect to expected outcomes by a team comprising of councilor/ corporator, collector's representative, ULB representative and PHEO representative.
- Hotspots – Water hotspots were set up in areas of acute water shortage. As short term measure, PVC tanks were procured and mobile tankers were engaged. Ward wise supply timings were fixed and notified for public knowledge.
- Smart Water Information Management System (SWIMS) – This web-based dashboard was used by the department for real-time monitoring and measurement of key performance indicators related to water supply. The dashboard is also available for public view.
- Mo-PRIDE – This web-based tool is used by department officials for real-time monitoring of all water supply projects.

Result Achieved

The completed projects have made a far-reaching impact, catering to all sections of the society.



Construction of water tanks in urban area

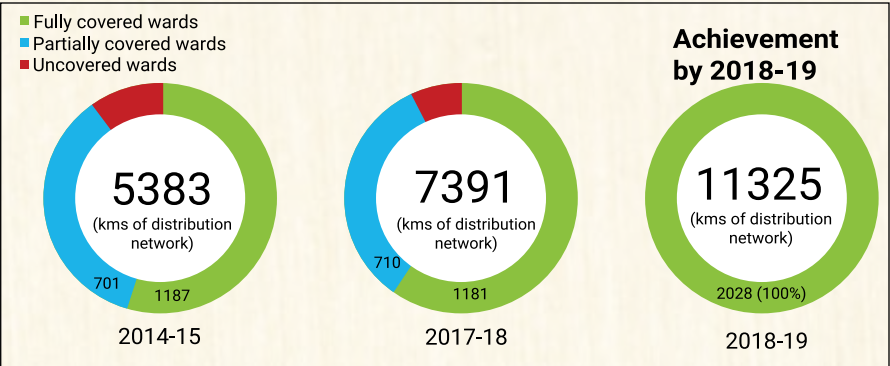
Some of the key achievements during the mission are as follows:

- More than 590 Projects completed by December-2018.
- A total of 21 lakh people have additionally benefitted from these completed projects.
- There is 60% growth in the number of household connections, i.e 75000 new connections added in the last one year.
- There is 45% growth in distribution network, from 5383 km in 2014-15 to 7796 km in 2018-19.

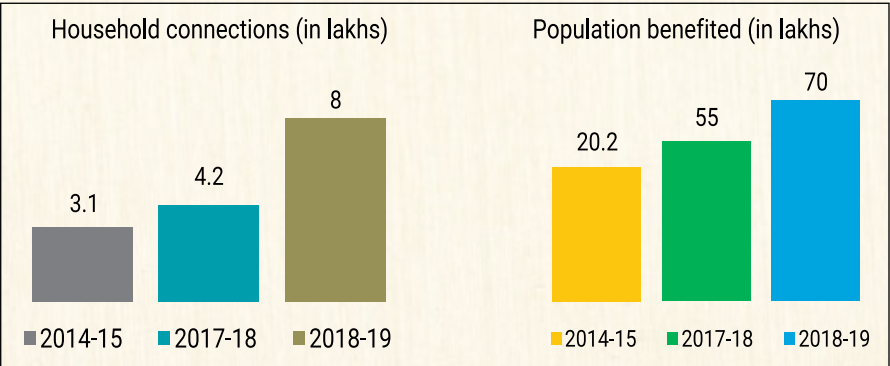


Water treatment plant

- Community Participation: ward level WATSAN Committee was formed and became functional with more than 12000 members.
- Community based / Ward level Water Monitors formed and functional (mostly Women Self Help Groups and CBOs).
- 1551 Jala Jogana Melas / Water theme based citizen connect camps at ward level conducted to create awareness on drinking water and mobilizing household connections.



Piped network coverage in wards



Household connections and Population benefited

Sustainability

Financial: The project will open up avenues for further revenue generation for the ULBs e.g. levy of water charges etc.

Social and Economic: For the sustainability of the initiative, WATSAN committee and water monitors would be facilitating the bill distribution and collection of water charges. Further, universal coverage provided to all social and economic class has made inclusive development possible. Women folks are saved from fetching water resulting in enhanced gender equity.

Cultural: Positive behavioral pattern has been observed as the project has ensured better hygiene.

Environmental: The piped water supplied is mostly drawn from rivers, which is a renewable source. In cases where bore well water is used, it is done considering the environment issues.

Institutional: The piped water projects were presently operated and maintained by PHEO. While going forward, the O&M may be operated jointly with suitable private partnerships.

Transferability and Lessons learned

Several best practices that could be replicated for successful implementation and achievement of the targeted goals are as follows:

- Community Participation
- Monitoring and Third Party Verification
- Web-Based Tools and Outcome Certificate

Various factors contributed to the success of this mission. Some of the key elements that helped accomplish this success are:

Community Participation: Decentralizing the process of decision making through community participation imparted a sense of ownership to everyone involved. Participation of local public representatives, NGOs, SHGs, and the larger public from the early stage made them aware of all aspects of the projects and facilitated them to build their capacity during the course of implementation.

Clustering of projects: Implementation of scattered and small projects is logistically difficult. Hence, projects under this mission were clustered to gain ideal scale. This has helped in better bid management and has suited the communities and the implementation partners alike.

Robust Monitoring Framework: The communities constantly monitored the progress of projects while the third party verification ensured quality and safety at sites. Further, recognition and addressing of issues and constraints both at local, regional and state levels, ensured by providing helpline 'Sanjog' of Odisha Government as well as a dedicated helpline of PHEO, made grievance redressal swift. Besides, the physical and financial progress of projects was also frequently reviewed by the Secretary, HUDD, Chief Secretary as well as the Hon'ble Chief Minister at the state level. Finally, constant monitoring at all levels done with web-based tools such as SWIMS and Mo-PRIDE ensured that there was no slackness by any of the implementation partners and thus, timely completion of projects could be achieved.

SWIMS –Real time Smart Dashboard

Smart Water Information Management System (SWIMS) was launched on 6th October 2016 for real time monitoring and measurement of key performance metrics w.r.t water supply, physical infrastructure, revenues etc.

- SWIMS made available for public viewing from July 2017 – first of its kind in the country.
- Digital display board for daily public disclosure near High Level Water Tank, Secretariat



CM launches lab to test drinking water

SANDEEP MISHRA

Bhubaneswar: Chief minister Naveen Patnaik on Friday inaugurated the Central Water and Wastewater Testing Laboratory at Palasuni to ensure supply of safe drinking water to city households.



Chief minister Naveen Patnaik inaugurates the water testing laboratory at Palasuni in Bhubaneswar.
Picture by Ashwinee Pati

The public health engineering organisation (Pheo), in collaboration with Delhi-based Spectro Analytical Labs Limited, has developed the modern testing laboratory. Both the agencies had entered into an agreement in December last year to develop the project. The lab is meant to check the quality of the drinking water before it is supplied to households.

Pheo superintending engineer Chitta Ranjan Jena said the laboratory was equipped with high-end equipment and technology. "Our private partner will collect and test water samples following every norm," said Jena.

Besides, the chief minister also inaugurated eight other divisional water testing laboratories through videoconferencing from Cuttack. The divisional laboratories have been set up in Bhubaneswar, Berhampur, Cuttack, Puri, Balasore, Baripada, Rourkela and Sambalpur.

The new facilities have increased the Pheo's capacity of testing water. Earlier, there were six water treatment plants in the city, but none of the plants were equipped with a laboratory. The water

sourced from the Daya, Kuakhai and the Mahanadi rivers is being treated and released for supply after manual quality testing.

"We had a laboratory at Naraj, but that was not equipped well enough to trace high levels of contamination. In 2015, we had automated the facilities at Palasuni, but now its capacity to treat and test the water has been doubled with addition of the new equipment," said a Pheo official.

The state government had mooted the plan of setting high-end water testing laboratories following the outbreak of water-borne diseases, such as hepatitis, in Cuttack and Bhubaneswar.

"The hepatitis outbreak triggered panic among the people. The water supplied by the Pheo was blamed for the disease. It is the duty of the government to ensure the quality of drinking water before its supply," said Jagamara resident Dinesh Nayak.

AWARD PHOTOGRAPHS



Universal Coverage of Urban Piped Water Supply by Housing and Urban Development Department, Govt. of Odisha



PMAY-LIFE House Construction through Woman Construction Group by Kudumbashree



HOUSING, URBAN POVERTY & INFRASTRUCTURE

2011-2018

YEAR 2017-18

JANAADHAR MANGALA - Integrated Township under PPP Model with a Focus on Affordable Housing at Gift City by Janaadhar India Private Limited

Gujarat International Finance Tec-City (GIFT City) is an upcoming international global financial services hub, situated in Gandhinagar, Gujarat, being developed by GIFT Company Limited (GIFTCL), a joint venture between Government of Gujarat and IL&FS. Spread across 886 acres, GIFT City is estimated to generate 30,000 job opportunities by the end of 2018. As a result, there is a need for development of a sustainable housing solution which would not only cater to the housing demand, but also take an integrated approach to ensure that the housing is affordable to the employees with all necessary amenities such as schools, hospitals and market places. GIFTCL found its partner in Janaadhar, an affordable housing company that aims to address the housing shortage of the urban poor. GIFTCL and Janaadhar have jointly developed an Integrated Township in the Domestic Tariff Zone (DTZ) of GIFT City– Janaadhar Mangala - **with a focus on affordable housing and wholesome living and facilities such as health clinic, community centre, market place, and plenty of open space.** It also encourages a walk-to-work environment, and is the pilot project for IBFC's Green Building Certification for Affordable Housing Project.



- Doors**
 - Hard wood door frame with flush shutter with both side laminate for main door.
 - Hard wood door frame with painted flush shutter for internal doors.
 - FRP/ PVC frame & shutter doors for toilet and bath.
- Windows**
 - Glazed anodized aluminium windows with clear glass.
 - MS grill on all windows.
- Painting**
 - Oil bound distemper for internal walls and ceiling.
 - Cement paint for external walls.
- Electrical**
 - Concealed wiring with switches.
 - Adequate light, fan and plug point.
 - 3KW power per flat.



Rendered views of the township

DIRECT BENEFIT TRANSFER – Online Payment System for BLC under PMAY by Housing and Urban Development Department, Govt. of Odisha

Government of Odisha, through Odisha Urban Housing Mission (OUHM) which is the State Level Nodal Agency (SLNA) responsible for providing housing for all in the urban areas under Pradhan Mantri Awas Yojana (PMAY), has undertaken a number of noteworthy initiatives. Beneficiary Led Construction (BLC) has been one of the verticals under PMAY, where the eligible beneficiaries are provided Rs.2.00 lakh in four installments for construction of houses. OUHM, in collaboration with banking partner (Axis Bank), has developed an **Electronic Fund Management System (EFMS) facilitating direct transfer of**

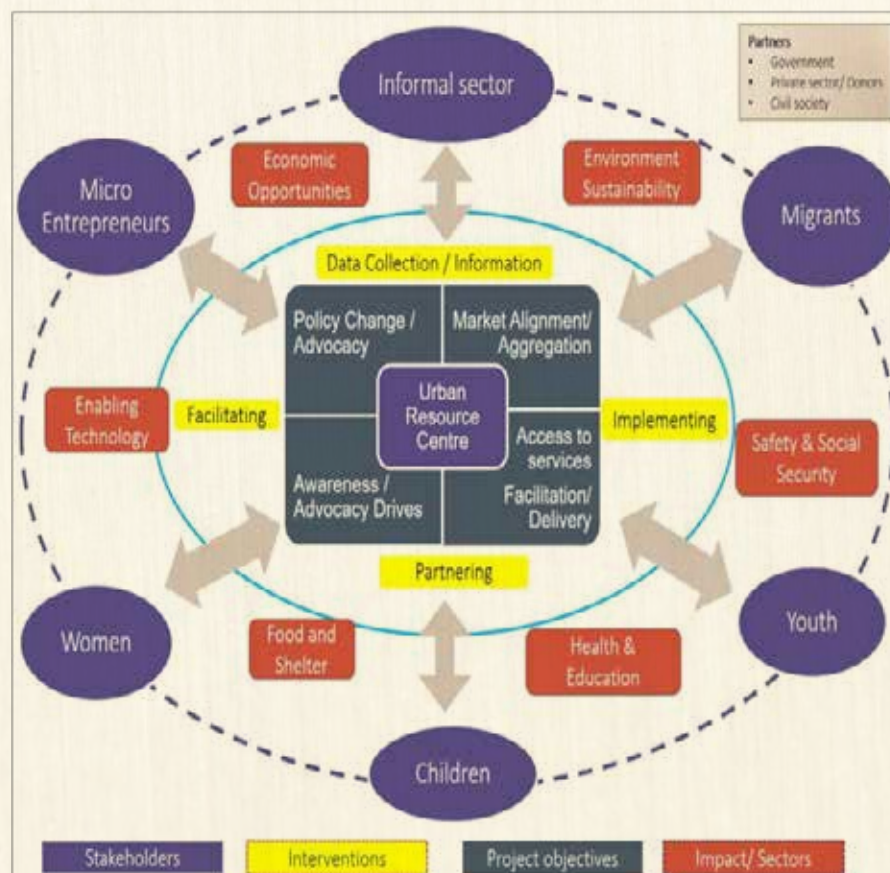
financial assistance in instalments to PMAY beneficiaries through their bank accounts.

Leveraging DBT-OPS mechanism, benefits go to individuals' bank accounts electronically, minimizing tiers involved in fund flow and thereby reducing delay in payment. This has led to money transfer to targeted beneficiaries, curbing pilferage and duplication. More than Rs.404 Crore has been disbursed till January 2018, through the application. Besides, the application is effectively addressing the capacity and resource issues at ULBs.

URBAN RESOURCE CENTRE by Saath Charitable Trust

Migration has become an integral aspect of urbanization. When informal sector workers migrate to urban areas, they tend to miss out many opportunities which a resident of the city is normally entitled to. Saath Charitable Trust with over a decade of experience with informal settlement dwellers realized that there is a need to connect them to various services in order to achieve betterment in their living condition. Urban Resource Centre (URC) was set up with a vision **to connect them to as many benefits as they can avail with the help of emerging leadership from within the community.** The center helps in the

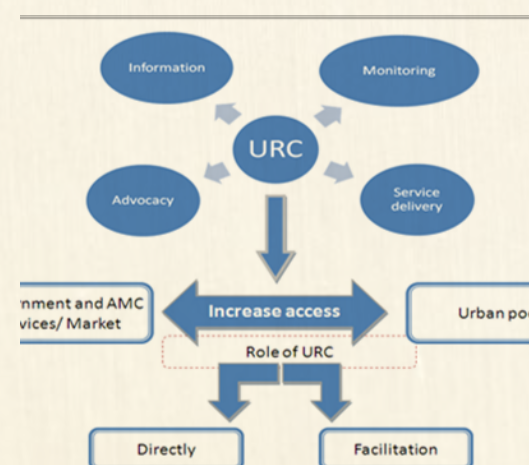
process of service facilitation by acting as a bridge between the community and relevant service provider. Impacting 1,80,000 people till 2018, it continues to operate through three centres in Ahmadabad and three in other states. This has helped the community members receive larger benefits such as credit, house, medical facilities, etc. leading to integrated development.



Various work fields of Urban Resource Centre (URC)



Interaction with Participants/Clients



URC model showing its four major components

LAND RIGHTS TO SLUM DWELLERS in Urban Areas of Odisha by Housing and Urban Development Department, Govt. of Odisha

The demographic shift from rural to urban areas over the decades has resulted in large chunks of government land being converted into informal settlements. In Odisha as per census 2011,23.1% of urban population (around 16 lakh) lives in slums without security of land tenure and are under constant threat of evictions. In view of this, Odisha Land Rights to Slum Dwellers Act, 2017 has been enacted by the Government of Odisha to issue land rights to slum dwellers in 109 Municipalities and Notified Area Councils of the State.

A historic legislation - Odisha Land Rights to Slum Dwellers Act, 2017 has been enacted by the Government of Odisha to issue land rights to slum dwellers in 109 Municipalities and Notified Area Councils of the State. The **land rights would be heritable, mortgageable but not transferable**. The settlement would be on the basis of actual occupation of dwelling and on in-situ basis, up to a maximum limit of 646 sq.ft. in Notified Area Councils (NACs), 484 sq.ft. in Municipalities and maximum 323 sq.ft of land both at Municipality and NACs in case of untenable slums on relocation basis. Programme was piloted in 9 towns of Ganjam and Puri districts. Implementation has been scaled up to rest 100 towns incorporating the lessons learnt from the pilot. Housing and Urban Development (H&UD) Department is the

nodal department to implement the legislation.

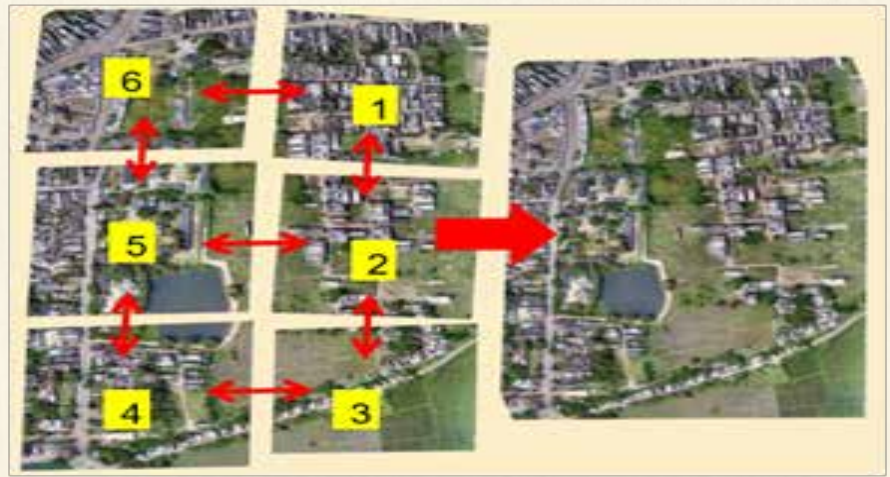
The standard operating procedures were notified and the responsibility was shared amongst the departments, partner agencies and the concerned ULBs for carrying out the key activities including delineation of slum boundaries, engagement of NGOs / CBOs for facilitating community mobilization, formation of slum dwellers association (SDA) for preparing list of eligible beneficiaries for approval by the Urban Area Slum Rehabilitation and Redevelopment Committee (UASRRC) and issue of land rights certificates.



Urban Area Slum Redevelopment and Rehabilitation Committee



Survey of slum area by using drone



Images Captured Through Drone Survey



Stakeholder Training

YEAR 2016-17

INITIATIVES IN FINANCIAL INCLUSION OF URBAN POOR WOMEN through Linkages with Income Generation Activities by Surat Municipal Corporation

Financial Inclusion is fundamental to equitable socio-economic development of any population and holds greater value for poor women in particular, since they face the double burden of being poor and the less equal gender. With this objective in mind, the Urban Community Development Department (UCDD) of Surat Municipal Corporation (SMC), Gujarat enhanced the income generating opportunities and outcomes for the urban poor women of the city of Surat and thus made significant strides in integrating the poor women with the formal financial systems.

The strategy adopted was **to identify economic opportunities for poor women in the traditional cultural practices and the emerging cultural milieu of the region; provide financial access along with infrastructure support** to enable them to explore such livelihood activities. UCDD identified beneficiaries of Government welfare programmes that had an initial level of understanding and preparedness about the credit operations of banks and collective bargaining capacity that Self help groups are trained in. The identified women beneficiaries were from Self help groups formed under different programmes of Government of India such as Swarn Jayanti Swarajgar Yojana, the National Urban Livelihood Mission, Ration Card Holders of the Below Poverty Line (BPL) population and beneficiaries of State programs like Mukhyamantri Amrutam and Maa Vatsalya. Various awareness programmes were conducted at ward level that led to an improved understanding of the merits of the Government's initiatives and instilled a feeling of belongingness to the program amongst the people. The programmes and the achievements in the same are as follows:

- SHGs in various SMC organized social fairs/melas : In the Rakhi Mela, 220 SHGs were provided stalls resulting in Total sales of Rs. 35,17,562/- and in the Navratri Mela, 154 SHGs were provided stalls with total resulted in sales of Rs. 34,76,715/- . Keeping in mind the increased demand for Ganesha idols during Ganesh Chaturthi festival, SMC trained by linking up the SHGs with the Gujarat Matikam Kalakari Rural Technology

Institute . 950 trained SHG members were able to sell Rs. 84 lakh worth of eco friendly idols.

- Mudra Loan Mela: For small enterprises set up, 309 loans were disbursed amounting to Rs. 99, 81,791/ , of which 210 beneficiaries were women beneficiaries.
- The Seva Setu Programme and the Garib Kalyan Mela facilitated better delivery of Government services to the target groups.

Other similar programmes were also conducted benefitting women and providing them with livelihood generation opportunities. While Government initiatives and interventions towards poverty alleviation are across the country, the socio-economic improvements in the lives of urban poor households demonstrated in Surat, are getting replicated in other towns and cities of the State.



Women group working for mela activities

FINANCIAL UPLIFTMENT OF URBAN POOR WOMEN by Engaging them in Traditional Cotton Textile Handloom Industries by Municipal Corporation Rajnandgaon

The State of Chhattisgarh is known for its rich, exquisite, varied and fine quality handlooms. Weaving is the ancient art and traditional heritage of Chhattisgarh. Rajnandgaon is one of the districts of Chhattisgarh state in which handlooms are flourishing under various weaving co-operative societies. Under the aegis of the Deendayal Antyodaya Yojana - National Urban Livelihood Mission of the Government of India, Self help groups of urban poor women in the Rajnandgaon District are receiving **skill training in handloom weaving through weavers' co-operatives; financial assistance for setting up enterprise through bank linkages and marketing support by the State**. This approach has the dual merit of uplifting the economic status of poor urban families in the district besides sustaining the

handloom weaving industry of the region. Rajnandgaon is known for its Bengal Nagpur Cotton Mills. At present, the cotton textile mills have closed down; but the poor workers and their families are still living there and are not been able to generate sustainable livelihood out of it. Hence, by connecting these families with their traditional business, the textile business is being extended along with raising the economic levels of these families.

Under the Deendayal Antyodaya Yojana-National Urban Livelihoods Mission, during 2015-16 and 2016-17, a total of 100 women were trained by Shri Sai Bunkar Cooperative Committee. After training, about 55 women have received work orders and about 10 women have been provided subsidized loans from the bank to set up their enterprise. The trained women are

HOUSING, URBAN POVERTY & INFRASTRUCTURE

getting income up to Rs. 300-400 per day with their monthly income ranging from Rs 3500 to Rs 8000, which is a substantial contribution to a poor household in the district.

In revitalizing the traditional skill, the government of Chhattisgarh has established a special identity for poor workers. Thousands of weavers’ families have added value to their traditional skills. With creation of new possibilities from the project, traditional and innovative workmen will get the medium of communication from the new market, and will be able to strengthen their financial condition with self-confidence.



Women working in cotton textile handloom industry



Training provided under NULM mission

YEAR 2015-16

AFFORDABLE HOUSING AND IMPROVED SERVICE DELIVERY in Chandigarh City by Chandigarh Housing Board

In line with Jawaharlal Nehru National Urban Renewal Mission (JnNURM) under Basic Services for the Urban Poor (BSUP), Chandigarh Housing Board implemented the Programme aimed at providing hygienic and better living to 23,841 slum dwellers spread over 18 notified slums in the City. The two sub-schemes namely 'Construction of 6368 Small Flats Phase-I' and 'Construction of 19360 Small Flats Phase-II' were approved by Government of India in 2006 and the task of rehabilitating the slum dwellers was entrusted to Chandigarh Housing Board (CHB). It was decided to **provide accommodation (in the form of one room flats) on license fee basis unlike the ownership model**. Based on the socio-economic survey conducted by IDFC, paying capacity of slum dwellers was estimated at Rs 1,000 per month. In order to ensure that there was no future encroachment on government land, it was decided that family not included in the biometric survey would not be eligible to get a housing unit under the programme.

Accordingly, Rs 800 per month was decided to be collected as license fee and after the end of 20 years, based on the willingness of the occupants and on paying the balance amount, the ownership could be transferred to the same occupant.

CHB has completed construction of 12,736 Small flats under the scheme, out of which about 12,000 small flats have already been handed over to the beneficiaries. Along with

the housing, parks and open spaces were developed and primary health centres and schools were also constructed.

By shifting of beneficiaries, about 100 acres of land worth Rs. 1000 crore has been made free from encroachment. With relocation of all the 23,841 families from 18 colonies under this rehabilitation scheme by 2013-2015, Chandigarh achieved the status of 'Slum Free City'. The transition from slums to small homes also resulted in better employment opportunities, more community participation, better education for children and better health for the occupants.



Government health centre at Dhanas



Transformation of slum at Dhanas by Chandigarh Housing Board



Colony No. 5 encroachments in Sector 50 and Sector 51



School at Dhanas



Vocational Training Centre at Dhanas



Transport Facility at Dhanas



Police Post at Dhanas

YEAR 2014-15

SERVICES FOR URBAN POOR – VOCATIONAL TRAINING HEALTH FACILITIES
by Ishwar Sankalpa, Kolkata

Ishwar Sankalpa (IS) a non-profit organization started in 2007, is a multi-pronged service delivery organization providing intervention for both the homeless and urban home-based poor population in Kolkata. In 2010, IS took up an outreach programme for the homeless people with psychosocial disability. Projects like Shelter Programme for such urban homeless, restoration programme, vocational training programme, and emergency response unit for street based emergency cases of the homeless & mentally ill people, day care centres for homeless people with psychosocial disability and Urban Mental Health Programme for slum population were part of this outreach initiative.

In 2007-2008, a baseline survey conducted by IS to find out the population of homeless/mentally ill, in the 141 Kolkata Municipal Corporation wards of Kolkata. This revealed that an alarming number of persons were in dire need for support and care. The survey revealed:

- Homeless women with mental illness are the most vulnerable and are subjected to sexual abuse and as a result, these women became vulnerable to forced pregnancy, HIV/ AIDS. Almost 90% of the women who are rescued have some kind of physical injury or major physical ailments.
- Mentally ill people, who are homeless are prone to drug addiction as their mental illness and lack of insight isolates them from humanitarian services of any sort.
- Due to deplorable inadequacy of services available for the homeless people with mental illness, these people remain outside the boundary of health care and are lost forever. The majority of the patients, both men and women, rescued belong to the age group of 18 to 35. They lack even the basic privacy and hygiene care while living a life of utter neglect.

IS came up with the proposal for provision of Shelter, as a part solution to the problems faced by these homeless people. The Kolkata Municipal Corporation(KMC) provided IS with a building which can house **80 inhabitants , to provide a safe and secure place of residence to the identified women.** Financial needs to run the shelter was made by converging funds from Social Welfare Department, companies, trusts and foundations. As the women recover, they were gradually brought, without any force, into the day to day activities, aided to socialize, given training in skills, resettled back to family life, thereby communicating to the society that they are treatable people. The programme has so far catered to more than 2000 homeless persons with psychosocial disability.

The learnings and experiences from the project helped greatly in developing the shelter programme for the targeted population. The motivation remains the same across all of Iswar Sankalpa's programmes i.e. mental healthcare becomes accessible to all, and no poor has to suffer neglect and abuse due to his/her disability.



Women working under Iswar Sankalpa programme



Activities under Iswar Sankalpa Programme



YEAR 2013-14

PRO-POOR ACTIVITIES through Micro Enterprise Support, Skill Training and Community Mobilization by Municipal Administration, Government of Tamilnadu

In the year 2013-14, Tamil Nadu Government took up the project of universal coverage for urban poor towards livelihood and improvement in the environmental condition for Inclusive Housing. The implementation of housing scheme for the Urban Poor through agencies like Urban Local Bodies and Tamil Nadu Slum Clearance Board were attempted to provide 16000 dwelling units for the year 2013-14 out of the total target of 1, 30,000 planned through 145 projects in the state. Tamil Nadu emerged as the first state to bring beneficiary led house construction through in-situ development. The state committed to strengthen the serviceability of the Urban Local Body in addition to providing shelter for the poor.

In line with the above, sustainable development was aimed through improvement in the financial ability of the Urban Local Body to meet the increasing demand caused due to rapid urbanization. All the Urban Local Bodies have earmarked a minimum of 25% of the municipal financial resources towards the basic services to urban poor fund in the Municipal Budget. The community based organization structured on a three tier basis has helped in

mobilizing the community towards development of their living standards, utilizing support of all poverty alleviation schemes.

The beneficiaries are assisted with subsidized cement through government cooperatives to make their construction of dwelling unit cost effective. **Community participation is ensured by involving the beneficiary to construct their own housing unit** as against the traditional procedure of engaging the contractors/NGOs/ department etc. for construction of dwelling units. Apart from the above, the state also had 86,504 active neighborhood groups and was effectively functioning through support of individual and group micro enterprises and skill development training programmes over the last 15 years.

As a result, 37,402 beneficiaries were trained, 14,004 were placed in jobs and 10,857 individuals were assisted with self-employment ventures. All these efforts by the government led to the improvement in the environmental conditions and livelihood generation for the urban poor.

CONSTRUCTION WORKER WELFARE PROGRAMMES by IIT, Gandhi Nagar

An initiative called **Nyasa** was started by IIT Gandhinagar (IITGN) in the year 2011, aimed at supporting and educating the children of migrant construction workers in and around the campus neighborhoods. This was used as a platform **to bring the children from dusty environs to an open air school within the IITGN temporary campus** in Chandkheda, providing children the quality time through education and entertainment while their parents were at work. Two Nyasa schools at the permanent campus of IIT Gandhinagar in Palaj cater to the needs of nearly 200 children of the construction workers. Nyasa's second mission was to cater to the housing needs of the migrant construction workers. The innovative design of housing and academic buildings at IITGN's Palaj Campus required a dedicated workforce, therefore IIT Gandhinagar committed to provide decent housing for migrant construction laborers during the tenure of their work. The construction site provided respectable and satisfactory housing for the families of construction workers and a safe environment for their children to play and learn.

Community engagement was one of the core missions of IITGN and the staff, students and

faculties of IITGN have all contributed their time, skills and financial resources to support Nyasa activities. As a result of the same, Nyasa had 55 active volunteers and steadfast support from the IITGN governing body. The Institute also undertook special initiatives for construction worker welfare through policy decisions and construction rules; it developed for its new campus. Provision of satisfactory housing for construction workers was made an explicit condition of the contracts issued by the Institute and this is implemented as a required best practice.

Basic housing, drinking water, sanitation etc. were provided to construction workers, which emerged as an example for future construction activities. Free education was also provided to children of construction workers, who typically have not ever been to schools. Mid-day meal and nutritious snacks were provided and regular health camps were conducted to ensure their physical health and well being. After attending Nyasa School, at least six students were helped to enroll in regular government schools.



Housing with good quality roof near construction site



No child left behind, a small effort to keep children occupied

YEAR 2012-13

UPGRADATION OF EMPLOYABLE SKILLS - UMEED by Ahmedabad Municipal Corporation

A programme called UMEED came up with the **purpose of creating opportunities for alternate livelihood options for the vulnerable and lower income groups of the society** for improving their economic standards and to enhance skills such that the livelihood interventions become self-sustained over a period of time. With respect to the same, 27 centres for Umeed Training Programmes were started by Ahmedabad Municipal Corporation (AMC) in February, 2007 with the help of four local NGOs. SEWA was the nodal agency from February, 2007 to August, 2010 for implementing Umeed programme. Valuable life skills were integrated into curriculum through an interactive teaching process. There was technical training imparted to candidates that included on-the-job training, assignments, projects and field visits. Entry level jobs were made available to the students in various industrial/service sectors.

Out of the total enrolled students of 28,288 under UMMED, 24,454 completed the training and apart from that 19,848 were placed and their dream of economical and social upliftment was achieved. Post Placement Support: UMEED assessed the effectiveness of its programmes by monitoring its alumni's progress at their workplaces. Programme implementation has resulted in creating awareness among the groups for adopting better living conditions and they gradually became part of mainstream of the society.



Training provided under UMEED

LEARNING ON WHEELS by State UPA Cell, SJSRY, Chandigarh

In the revised SJSRY (Swarna Jayanti Shahari Rozgar Yojana), guidelines 2009, with the introduction of Skill Training for Employment Promotion amongst Urban Poor (STEP-UP) component, a new dimension was added towards poverty alleviation to Employment Linked Skill Training Programmes. In the past, SJSRY had mixed experience in implementing STEP-UP Component and in achieving the outcomes. Skill training programmes like computer -fundamentals with MS Office, networking, accounting with Tally and soft skill training, certificate course on computer hardware, certificate course on computer software, certificate course on financial accounting, Tally and communication skills, professional driving, security guard, business process outsourcing etc. were conducted with the assistance of accredited and certified training institutions.

An idea was conceived of devising **a partnership model using mobile training concepts with the help of Commonwealth Youth Programme for the under-privileged community.** CYPTEC on wheels was empaneled under SJSRY for providing ICT awareness and IT courses to the urban poor living at the outskirts of the cities in slums and rehabs. The methodology adopted for the training of CYPTEC on wheel was based on the principle of reaching the unreached and bridging the digital divide.

CYPTEC on Wheels was given place in empanelment list under STEP-UP component of SJSRY on the basis of invitation. A formal work in trade of Personality Development+Certificate in Computing through Mobile Van was given to CYP for organizing training to the BPL families for a duration of six months in which instructor's salary, hardware tool kit, books, electricity were provided by State UPA Cell, SJSRY for a batch of 25 beneficiaries. About 6 training programmes were organized in different colonies. On the completion of the project, 152

BPL beneficiaries in 6 batches were provided training. Not only ICT training was given but also personality development and personal grooming were also included in curriculum.



CYPTEC on wheels

ECO-FRIENDLY HANDBAG MANUFACTURING by HIV+ Poor Women SHGs by State UPA Cell, SJSRY, Chandigarh

Urban Women Self Help Programme (UWSP) component under Swarna Jayanti Shahari Rozgar Yojana (SJSRY), a scheme of Ministry of Housing and Urban Poverty Alleviation for alleviating urban poverty gave an **opportunity to HIV+ poor women to come up to a common understanding to work together for their livelihood generation.**

For the first time, understanding and familiarity with HIV+ Women Self Help Group (SHG) was identified, formed and sponsored for sanctioning to any bank. With initial hurdles, the SHGs started functioning with the assistance of CNP+ (Chandigarh Network of People living with HIV aids). With the advocacy of CNP+ to Food & Supply Department, 80 PLHIVs (People Living with HIV) were issued Antyodaya Anna Yojna (AAY) Cards. Following Supreme Court directives on HIV+ persons, SJSRY Cell decided to extend benefit to PLHIV community too by considering them in all the components of SJSRY. A mainstreaming consultation was organized with assistance of State AIDS Control Society Chandigarh for the ULB staff so that understanding on HIV/AIDS can be developed among CDS and ULB staffs who generally handle them.

The main objectives and strategies in taking these schemes to urban poor PLHIVs included the identification of poor HIV+ women, faith building among PLHIVs, capacity building of the PLHIV community, development of project proposal by any expert agency, linking PLHIVs with financial institutions and network building and social marketing.

Manufacturing and printing of eco-friendly bags was decided as a group activity for their livelihood generation. The project was developed by Regional Centre for Entrepreneurship Development (RCED) Chandigarh as CNP+ was lacking in formulating any proposal. Canara Bank, Micro finance Branch Chandigarh has agreed to finance the project of SHGs. This initiative was one of its kinds in North India and first initiative under SJSRY for HIV+.



WOMEN AS CHANGE AGENT in Building Leadership and Bringing Changes in their Communities by State UPA Cell, SJSRY, Chandigarh

Women as a Change Agent in Building Leadership and bringing change in their community was the sole aim of the above participative community development model. This initiative hovers around **poor women who were a part of socio-economic discrimination by their family and community**. It was believed that lack of expert staff in social development, livelihood and community development at ULB level made beneficial schemes far behind the reach of underprivileged. Much needy beneficiaries were left behind due to lack of mechanism for identification of beneficiaries and non-compliance of eligibility criteria in certain proofs viz. BPL survey and yellow cards etc.

Community Development Society (CDS) is an organizational pattern which is able to keep vertical as well as horizontal relationship between urban poor and government machinery at all levels from urban area to national level. UCDN component in revised SJSRY guidelines has given wider avenues in the area of community development by way of democratic community structures.

The core objectives of these networks included paving women leadership among urban poor, community empowerment and capacity building, financial inclusion, participatory community development and linking livelihood generation for the urban poor.

A framework was designed for its proper functioning. The major activities conducted for this network of CDS were coordinating the conduct of slum, Households and livelihoods surveys and maintaining database on the urban poor and their needs; working with the community to implement and monitor SJSRY and related programmes or activities; assessing skill needs of the urban poor and facilitating skill development training and post-training handholding; facilitating community empowerment through community level training, information sharing, exchange of experiences, community skills enhancement programmes, etc.

Initially a mapping exercise was done on the city map; Neighbourhood Groups were identified. Neighbourhood Committees (NHCs) were formed and thereafter CDS was formed on the basis of elections or consensus. More than 13 major sites were covered with a wide coverage of approximately 10,000 families. Approx. 160 urban poor women were directly part of the Community Development Societies; who were taking the whole benefits of the scheme to the bottom line.



Capacity building exercise being conducted

YEAR 2011-12

KUDUMBASHREE - STATE POVERTY ERADICATION MISSION for Slum Improvement through Community Network by Kudambashree

In Kerala, under Integrated Housing and Slum Development programme (IHSDP) of Jawaharlal Nehru National Urban Renewal Mission (JnNURM), 45 Urban Local Bodies (ULBs) were engaged in works including infrastructure upgradation pertaining to housing, sewerage, road, sanitation and drinking water. Kudumbashree - the state Level Nodal Agency for anchoring all the centrally sponsored schemes for upliftment of the urban poor in the state, in line with the above programme worked for its State Poverty Eradication Mission for Slum Improvement through community network.

The project chosen was located in Chavakkad Municipality in the west coast of Thrissur district. Due to lack of regular income and due to poor living conditions, slums had emerged in the town and out of the 27 notified slums, 7 of the most vulnerable colonies with a total population of 821 were identified to be covered under IHSDP, based on a survey conducted by the Community Development Societies in 2006-07. The inhabitants of these colonies were mainly casual labourers. The project **aimed at improving the quality of life of the urban poor in Chavakkad through improving the condition of housing stock, provision of efficient services to each household, ensuring equal access to social and community facilities and economic empowerment of the community through effective use of**

untapped literate female workforce. A special drive was initiated to form Neighborhood Groups (NHGs) as a basic requisite for the advancement of the programme in the project clusters. The Community Development Society (CDS) gradually took the role of a 'contractor'. They pooled in antique woodwork and other raw materials for construction from demolished structures for building cost effective houses in the clusters.

The impact of the project- A total of 79 new houses were constructed under the project. Each cluster was upgraded with physical infrastructure such as efficient drinking water supply, rainwater harvesting structures, covered sewerage network, sewage treatment plant, legal electric connections, tarred approach roads with street lighting and fencing; as well as social infrastructure such as libraries, anganwadis, study centres for girl children, community halls, health clinics etc.

Participatory planning was the key tool adopted to identify the critical problems and the priorities for adoption of socio-economic strategies for development of the clusters. The collectivism brought in a sense of ownership for sustaining the local development activities. The women structures were now able to implement and monitor the whole process and were able to exercise their right for entitlements instead of remaining at the fringes. The

NHGs have gradually increased in number from 12 to 40. Destitute and mentally ill are taken care of through the collective community process. The Kudambashree network supported in building not only a quality living environment but also provided a platform for access to menu of services such Public Distribution System (PDS), health care, widow pension etc. for a sustained quality of life.

Slum upgradation through community participation ensured successful planning, implementation and sustainability with short term and long term positive impacts. Decentralisation and participatory planning by women network are very effective methods for adoption in slum improvement programmes which strengthen local self-help capacities and improve the status of women and disadvantaged groups among the Economically Weaker Sections.

DEENDAYAL AWAS YOJANA AND NEW ATAL AWAS YOJANA by Chhattisgarh Housing Board

Housing Board of Chhattisgarh (CGHB) was re-constituted in the year 2004 with a clear mandate to focus on social housing (LIG and EWS housing). Since private sector builders were focusing only on the top-end economic bracket and neglecting the lower economic end, CGHB initiated to protect the interests of the Low Income Group (LIG) and Economically Weaker Sections (EWS) segments of the housing market.

During that time, in Chhattisgarh nearly 80 percent of the urban population belonged to EWS/ LIG and to safeguard their needs CGHB took certain initiatives, the first one being launching of Deendayal Awas Yojana to provide for LIG housing. **The objective was to provide a decent two bedroom dwelling unit at an affordable price of around Rs. 2,00,000/-.** A target of 10,000 dwelling units was fixed. The scheme was a run-away success. Under Deendayal Awas Yojana, more than 20,000 families became owners of affordable dwelling units. CGHB then focused on economically weaker section (EWS) and launched New Atal Awas Yojana which was also a success.

The two flagship social housing schemes of CGHB not only created a substantial housing stock, they also had a catalytic effect to keep the prices of dwelling units built by private-sector builders under check. For implementation of both the schemes, finding low cost land was a major challenge. For New Atal Awas Yojana, the government ordered builders

to provide land at a notional price of Rs.1/- per sq. ft. in lieu of paying shelter fee. The registration fee and stamp duty were waived to help CGHB keep the final cost of land low.

Similarly focusing on the design of the dwelling unit, two rooms were fixed as the minimum norm to ensure privacy for couples, instead of just one room and along with that functional open space were also provided for the community. The unit design was planned in such a manner, so as to allow for expansion in future if the need of the family grows.

In the later stages, some beneficiaries resented the increase in the cost of the dwelling unit which was largely due to time over-run in the project, caused by an acute shortage of building technicians (masons, etc.). The boom in housing and other construction activities had created a shortage of such manpower. CGHB therefore launched a masons' training program in which over 2,500 masons were trained by Construction Industry Development Council (CIDC), New Delhi. Another matter of concern was the procurement of land. This led to amendments in the CG Municipal Act, 1956 and CG Municipalities Act, 1961 and it became mandatory for all private builders to provide 15 per cent of raw land for EWS housing. Likewise, they were required to build additional 10 per cent dwelling units for the low income group. These initiatives of CGHB under social housing were found significant enough by Cambridge University and were taken up by a student for their research study.

NEW INITIATIVES IN APPLICATION OF CONSTRUCTION TECHNOLOGY for Affordable Housing by Karnataka Slum Development Board

With the experience gained in the construction of GF units with lightweight concrete, Govt. of Karnataka, in order to expedite the speed of construction for its low income group houses, directed Karnataka Slum Development Board (KSDB) to take up ASARE Scheme in the flood affected areas of northern part of the state. Totally 1200 Ground Floor Dwelling units and 4866 Dwelling units were taken up by KSDB under the Government of India's Jawaharlal Nehru Urban Renewal Mission (JNNURM) – Basic Services for the Urban Poor (BSUP) programme.

The Structural Light Weight Concrete (SLWC) is a mixture of cement, fine sand, water and special foam, which produces strong, light weight concrete containing millions of evenly distributed, consistently sized air bubbles, or cells. The density of SLWC is determined by amount of foam added to the basic cement, sand and water mix. Foam concrete is fire resistant, has high noise and thermal insulation properties and can be sawn, nailed

and drilled using conventional tools. SLWC with density of 1600 kg/cum to 1650 kg/cum would be used for wall and roof, LWC with density of 1000 kg cum was used for flooring of the building. The philosophy behind marking the mix was to use available materials, in additions to materials that can provide strength as well as quality for making the mix. structural configuration composed of pile foundation being predominantly used in clayey soil, plinth beam with M15 Grade conventional concrete and monolithically cast shear walls and roofs using PLASTECH form work systems with Structural Light Weight Concrete (SLWC) of 1600 kg/cum density with 28 days target strength of 15 N/mm². This technology does not require size stone masonry for foundation and bricks with cement mortar, which consume considerable time for construction. In terms of cost, there is a savings of about Rs.1100 per sqm with use of this technology. The temperature inside as measured in the demonstration unit was observed to be less than 30°C.





SANITATION

2018-2019



YEAR 2018-19

DOOR TO DOOR COLLECTION OF SANITARY NAPKINS AND DIAPERS by Petlad municipality, Gujarat

Being sensitive to domestic biohazards, **Petlad Municipality** has taken the initiative to segregate sanitary napkins at source, collect and treat them separately. For this, Petlad Municipality has introduced a special vehicle with required manpower for collecting sanitary napkins and diapers. Further, 10 incinerators have been purchased and installed at 10 various locations and some sanitary pad dustbins have also been made out of waste scrap and placed in the public toilets. Digital platform is being used for collecting sanitary napkins and diapers.

Introduction

Being in different nature, domestic biohazard needs different kind of management than that of the other solid wastes and management of such hazards are very difficult. If such type of waste is not disposed off scientifically, it becomes the cause of land pollution. Moreover, this biohazard remains intact for 400 years in the land, and hence, it is to be processed scientifically.

Petlad Municipality, with a population of about 55000 is the only municipality of Petlad sub-district, Anand district in the state of Gujarat. It is the sub district head quarter and the district head quarter Anand is located 24 km away from Petlad. It is a (B) class municipality, founded by Koli Chief Patal Khant. Total geographical area of this municipality is 9.19 Sqkm, housing 10,969 number of households with a total population of 55330 (population density of 6021 persons per Sqkm) and a decadal population growth rate of 11.44%. There are 12 wards in the city, among which Petlad Ward (ward no 01) is the most populous ward with a population of about 12000 and ward no 06 is the least populous ward with a population of 1330.

Petlad is well known for its efficient citizen interface for public grievance redressal through its Jan Suvidha Kendra (Citizen's Centre). Almost 79% of all households in the city have individual water supply connections and about 96% have access to toilets. Almost 82% of the households are also served by a door to door waste collection service.

Background

Generally, people used to dump domestic biohazard waste with common household waste and it became very difficult to segregate this, as it requires different kind of treatment than of common solid waste. Thus, solid waste segregation became a prime requirement. In such a situation, **Petlad Municipality decided to collect biohazard wastes separately and dispose them scientifically.**

Key dates

The project has been completed in the month of August of 2018.

Main focus

With an aim to treat domestic biohazard waste separately, Petlad Municipality had objectives of segregation of domestic biohazard waste at source, and thus collects for further disposal scientifically.

Mobilization of resource

Financial support of Rs. 4 Lakhs for the project was provided by Petlad Municipality. Regarding manpower, a team with a man and a woman has been appointed for collection of domestic biohazard waste. As the project is women sensitive, female manpower has been appointed for waste collection process. Two Self Help Groups (SHG) have also been engaged in this activity.



Self Help Group

Process

For the collection of solid waste, Petlad Municipality purchased seven rainbow colored e-rickshaws. Among them, yellow colored rickshaw is provided for collection of sanitary waste only. Petlad Municipality has purchased 10 incinerators and installed them at 10 various locations like railway station, bus station, schools, collages, shopping complexes, etc. Some sanitary pad dustbins out of waste scrape has also been made and placed in public toilets. For collecting and disposing the sanitary pads & diapers, 2 SHGs and a team of a man and a woman have been engaged.



Yellow Colored e-rickshaw for collection of sanitary waste only and group appointed for collection

Digital platform has been engaged in the process of domestic biohazard waste collection. Whatsapp, a popular social media has been engaged in this activity. Citizens can call for collecting domestic biohazard waste through phone call to helpline number and through Whatsapp.

A unique problem was encountered in Petlad Municipality during this collection operation. The woman, who was in charge of collection of such waste, was boycotted by her own community, the reason being, she was engaged in collecting a lower grade of waste. After a successful effort through a process of campaign and awareness generation, the situation has changed now. Pamphlets have been distributed among citizens as a awareness generation tool regarding the initiative.



Distribution of pamphlets



Pamphlet

Results achieved

Among all the 171 municipalities in Gujarat, only Petlad municipality has provided home-to-home service for collecting used sanitary pads and diapers and disposing off scientifically. The initiative of Petlad Municipality is environment friendly and unique. The authority received good response from the citizens. In the beginning, the Authority used to get 20 to 25 calls per day for collecting sanitary napkins but gradually it rose up to more than 200 calls per day within a span of 4 months.



Incinerators

Sustainability achieved

The project was a step towards environmental sustainability, as the domestic biohazard waste was being processed scientifically.

Transferability of the project

Other municipalities can replicate the project considering the size and nature of urban area under their jurisdiction.

BEST OUT OF WASTE by Petlad Municipality, Gujarat

Aimed towards use of unutilized potential resources and saving of expenses due to lack of fund, Petlad Municipality has used scrap materials to prepare litterbins as part of solid waste collection infrastructure. In this regard, apart from Municipal employees’ participation through its own workshop, school students have also been engaged in the process. As a result, the project has been implemented at 1/10th cost of installing new/ other type of dustbins.

Introduction

There is a thin line of perception between waste and resource, and it largely depends on the level of understanding, technological status, financial capability and most importantly, approach of the society or the decision maker. In this regard, **Petlad Municipality (PM), with its limited financial capability has set an example of management of waste through waste itself.** The whole idea is to use some of the waste materials as resource for management of solid waste collection process. This particular innovative approach has made possible installation of solid waste collection system through dustbins at very low cost.

Petlad Municipality, with population of about 55000 is Petlad sub district’s only municipality located in Petlad sub district of Anand district in the state of Gujarat. It is the sub district head quarter and the district head quarter Anand is located 24 km away from Petlad. It is a (B) class municipality, founded by Koli Chief Patal Khant. Total geographical area of Petlad Municipality is 9.19 sq. km. having population density of 6021 persons per sqm.

Petlad houses 10,969 number of households having total population of 55330 with a decadal population growth rate of 11.44%. Petlad is well known for its efficient citizen interface for public grievance redressal through its Jan Suvidha Kendra (Citizens Centre). Almost 79% of all the households in the city have individual water supply connections and about 96% have access to toilets. Almost 82% of the households are also served by a door to door waste collection service.

Background

Having a dream of a cleaner town, PM had the requirement of making a solid waste management infrastructure which was hard to implement due to lack of financial resources. This situation has forced the authority to make some innovative approach to make it possible with limited financial resources, which resulted in using iron scrap for making dustbins. The municipality had passed a resolution for selling the iron scrap, which included big containers for garbage, broken railings, hospital’s scrap beds, rods etc. Usually this types of scrap are sold to the scrap vendors at very low cost. This iron scrape has the potentiality to be reused as dustbins by modifying it, which would enable the authority to implement the project of installing dustbins at very low cost.



Scrap material

Key dates

In the month of January, 2018 the project has been completed.

Main focus

As the issue was lack of funds, the main focus of the project was to complete the project within allocated grant through saving in expenses. Reuse of scrap by modification instead of purchase of new one was found to be the way to meet the demand at lower cost.

Mobilization of resources

The financial resource was mobilized from Municipality’s own fund. PM has its own workshop for welding and gas cutting by employing 3 persons. The presence of infrastructure at its own made the Municipality capable of preparing the required items from scrap on its own, at a very low cost. Regarding human resource, municipal employees, school students played an important role to give an aesthetic sense too.



Processing at workshop

Process

The process of implementation involved several steps. In the first step, a number of dustbins and litterbins were prepared from waste scrap material. This was done at the workshop located at the municipality. In the next step, installation of these dustbins was done at appropriate locations. Since made from scrap material, the dustbins looked ugly after installation, thus municipal employees including President, members, Chief Officer, students of the school have given “SHRAMDAAN” to make them beautiful. After an effective effort by these people, the ugly looking dustbins were added with a sense of beauty and attraction.



Prepared dustbins



Different types of dustbin



School students with their little arts

Results achieved

Under this project 100 litterbins, were made and installed in the city covering 3 sq. km. of area. With this innovative approach of using scrap material for making litterbins, only 1/10th part of cost was incurred, compared to procurement of new litterbins and thus enabled a step towards financial sustainability of the Institution.



Beatification of dustbin



Installation and use of dustbin

Sustainability

Reuse of scrap materials reduces amount of waste material, which is an indication towards environmental sustainability. Since the cost involved in this process is only 1/10th of the cost for providing new dustbins, savings of expenses indicate financial sustainability too.

Transferability

All other ULBs may adopt this policy to implement the solid waste collection infrastructure at low cost.

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- <https://www.youtube.com/watch?v=JKl-vO-xzwc&feature=youtu.be> zee news

B Class Municipality: Government of Gujarat has classified 'Nagar Palika' based on population, viz., A Class - >1,00,000, B Class - 50,000 to 1,00,000, C Class - 25,000 to 50,000, D Class - 15,000 to 25,000

Petlad Municipality (PM)

Petlad Municipality, with population of about 55 thousand is the a municipality located in Petlad sub district of Anand district in the state Gujarat. Total geographical area of Petlad municipality is 9 sq km and population density of the city is 6021 persons per sq km. Petlad is the sub district head quarter, district head quarter Anand is situated 24 km away, and Gandhinagar, the state head quarter, is situated 124 km away Petlad. Yearly average rainfall of the city is 750 mm. Maximum temperature here reaches up to 43.5°C and minimum temperature goes down to 15.5°C.



Telecast on electronic media

SAY “NO” TO MANUAL SCAVENGING IN SEWER OPERATIONS by use of Mini Sewer Jetting Vehicles – A Swachh Bharat Initiative by Hyderabad Metropolitan Water Supply and Sewerage Board

In spite of the presence of law against manual scavenging in sewer operation, the trend continues in most of the cities in India including Hyderabad. In this regard Hyderabad Metropolitan Water Supply and Sewerage Board (HMWSSB) took the initiative by adopting the suction cum jetting technology for cleaning of sewers. But the presence of non-maneuverable narrow lanes, especially in the old city area, prevented using this technology as a replacement for manual scavenging in sewer operation. This in turn forced the Authority to think on technological intervention, thus resulting in Mini Sewer Jetting Vehicles. In addition, a mobile application designed by integrating the complaints module, helps to attend the complaints in a speedy manner and provides the driver in-charge an easy access to the site. Integration with the various Government schemes has enabled people from Scheduled Caste and Scheduled Tribe background to purchase Mini Sewer Jetting Vehicles and provide them to HMWSSB on hire basis, which in turn has helped them to improve their socio-economic status. All these have made the entire city of Hyderabad free from manual entry for sewer cleaning and maintenance.

Introduction

Experiencing multiple-fold population growth in the last three decades, Hyderabad can be called as one of the fastest growing metropolises in India. Exponential growth has made its crowded streets extremely congested. Several parts of Hyderabad, especially the old city, have narrow streets and lanes. Structures on either side of these narrow lanes have transformed over years to taller buildings, resulting in increased pressure on physical infrastructure. Spread over an area of 169 sq. km, Municipal Corporation of Hyderabad (MCH) with 172.65 Km. trunk sewer lines and 6083 km of lateral sewer lines, serve a population size of about 45 lakhs, in which 625 sewerage workers of Hyderabad Metropolitan Water Supply and Sewerage Board (HMWSSB) are engaged and are exposed to manual sewerage operations. This has resulted in loss of dignity of the sewerage workers and the health and life of these workers were also at greater risk.

Background

Hyderabad is served by the sewerage system that consists of sewer lines of different diameter ranging from trunk lines being more than 600 mm in diameter to laterals being 200 to 500mm in diameter. The sewerage from congested narrow lanes in the city, serving the residential and commercial areas, is usually collected through smaller diameter of 150 to 300 mm sewer lines. Not all the drains in the city are closed drains and hence get clogged due to the solid waste being dumped by residents/commercial establishments etc., resulting in overflow of drains. Providing good service was difficult by applying manual scavenging to clean sewers as well as it was an unhealthy practice where 625 sewerage workers of HMWSSB were directly impacted.



Telecast on electronic media

Source: The Hindu, New Delhi,

July 10, 2019, 01:21 IST, E-Publication URL: <https://www.thehindu.com/news/national/88-manual-scavenging-deaths-in-3-years/article28336989.ece>

Manual scavenging has been prevalent for centuries, as a systematic part of the society. Last few decades have observed announcement of acts and laws in India to remove manual scavenging in various forms. Manual scavenging had led to death and health issues amongst manual scavengers. **With a vision to develop and demonstrate a successful model to remove manual scavenging in sewerage cleaning operations,** HMWSSB took up a few initiatives. To treat the problem of overflow mechanically, a few years ago, investment in suction cum jetting technology (Sewer cleaning Vehicles) was made. While these machines were effective in cleaning trunk sewers, outfall sewers etc., they could not make their way to narrow lanes. Though the technology was effective, it did not eliminate manual scavenging and the overflow of sewers in crowded/narrow lanes. A technological modification was needed to solve this dual problem. As the sewer cleaning machines provided effective results, HMWSSB team worked again with the technology supplier to develop sewerage cleaning machines, which could penetrate into the narrow lanes and crowded areas, to replace manual means of cleaning like rodding, pulling by ropes, bucketing, usage of long spades etc.



Manual scavenging



Manhole in narrow lane

Key dates

Dates	Significance/Achievement
17/08/2016	Circular regarding prohibition of hazardous cleaning by manpower entering into sewer manholes
09/01/2017	Government Accorded Permission to engage Mini Sewer Jetting Vehicles on hire basis.
25/01/2017	Engaged a partnership with Ramon Magsaysay Award Winner, Sri Bezawada Wilson of Safai Karmachari Andolan and conducted awareness workshops with workers, staff, 89 NGOs and residential welfare associations to eliminate manual scavenging
13/02/2017	Circular incorporating necessary safety clauses in the tenders for sewer cleaning
05/06/2017	Deployment of mini sewer jetting machines
05/06/2017-09/06/2017	Training on Standard operating procedures developed for manhole cleaning delivered by ASCI for all workers associated with manhole cleaning.
24/08/2017	Presentation by MD, HMWSSB at Ministry of Urban Development, New Delhi
05/10/2017	A Four Member Team of Delhi Jal Board visited HMWSSB to study about working of Mini Air Jetting machines.
08/09/2017	Visit of Delhi SC/ST Welfare Minister to HMWSSB.
21/05/2018	'Telangana State Excellence Awards 2018' conferred for efficient sewer operations by use of Mini Sewer Jetting vehicle for eliminating Manual scavenging.
19/11/2018	AMRUT Tech Challenge Award 2018 under 'Cleaning of Sewerage Systems' category award has been conferred to HMWSSB on the occasion of World Toilet Day – New Delhi.

Main focus

Main focus of the project :

- a. To enable technological intervention to achieve desired 'No manual sewer operations'.
- b. To have enabling regulatory framework restricting manual sewer operations.

Establishment of priorities :

HMWSSB took the leadership role in implementation of no manual scavenging by:

- Modification of existing rules and procedures related to sewerage operations and contracting leading to enhanced safety of workers.
- Facilitating the development of mini sewer jetting vehicle through M/s Tata Motors and M/s. Kam Avida.
- Helping the scavengers and people from backward classes to avail the government incentives for purchasing the vehicles and machines.

Mobilization of resources

The model for removing manual scavenging has been based on an entrepreneurship and ownership mode. The vehicles owned by suppliers or contractors, are mostly from deprived section or backward classes of the society. Nearly 75% of the capital investment was mobilized through loan from State Bank of India (SBI) under the 'Start up India' funds, for those who were buying the machines, to provide hire services to HMWSSB. Promoter has contributed the remaining amount and has received a working capital loan as well. Working capital fund of Rs 1.25 Lakhs was facilitated as bank overdraft. The SC/ST owners could apply under 'T Pride scheme' of Telangana Government, by which the investment subsidy of 35%/45% (for men /women) and interest subsidy of 9% could be availed. Now 72 mini sewer-jetting vehicles, owned by people who were from manual scavenging backgrounds, are hired by HMWSSB for cleaning activity.

HMWSSB has played the role of a facilitator in identification and development of customized equipment along with the supplier and assistance in mobilization of financial assistance. Thus, HMWSSB did not bear any direct financial expenses, however it pays utilization expenses on a monthly basis. Hyderabad Metropolitan Water Supply and Sewerage Board has invested Rs. 24 crore for this project during two consecutive years of 2017-18 and 2018-19, Rs. 12.63 crores and Rs. 11.37 crores respectively. The technical resources were required to have custom made machines to penetrate the narrow lanes for cleaning. Technical associations for developing mini sewer jetting machines were fulfilled by M/s. Tata Motors for the chassis of the vehicles and M/s. Kam Avida Enviro Engineers, Pune for assembling and mounting of the equipment onto the chassis. Dalit Indian Chamber of Commerce and Industry (DICCII) has rendered non-technical, managerial and investment services to the potential bidders. They helped the interested people in procurement of funding through 'Stand up India' Scheme, purchase of vehicles, uploading and filing of bid documents for the tender on hiring Mini Sewer Jetting Vehicles to HMWSSB and applying for subsidy under Telangana Government's 'T-Pride Scheme'. Human resource for the work primarily came from the same set of people who earlier worked as or had the background of manual scavengers. They were provided appropriate training and awareness sessions for this purpose.

Process

HMWSSB has played the role of regulatory agency, which took the lead in identifying and implementing appropriate regulatory framework, facilitation in technology development through technology partners, and identifying the route for enablement of it's 'no manual scavenging' initiative. It has formulated some steps to reach its aim regarding 'no manual scavenging', viz. firstly, utilization of all Mini Sewer Jetting Vehicles by HMWSSB

on hire basis, and secondly, creation of a web based mechanism integrated with a mobile application to ensure that the ground details of the work are immediately made available to the concerned section manager/officer to monitor and to make payments to the concerned vehicle owner/contractor. This has assisted in smooth planning and monitoring of each mini sewer-jetting vehicle.



Working with Mini Sewer Jetting Vehicle



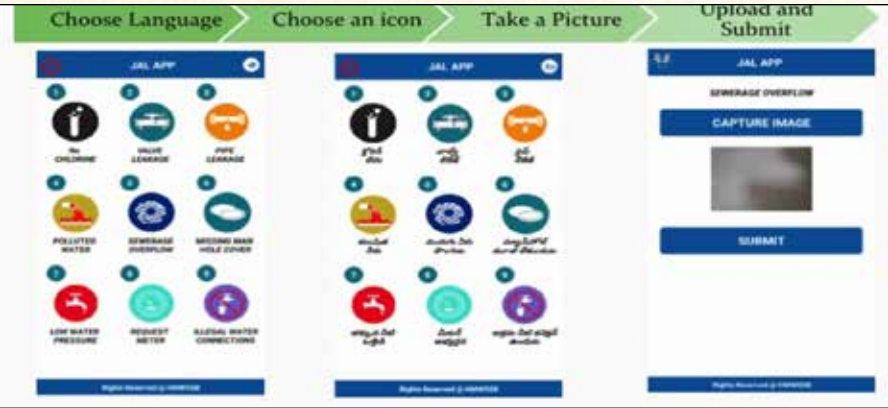
Working with Mini Sewer Jetting Vehicle



Mini Sewer Jetting Vehicle

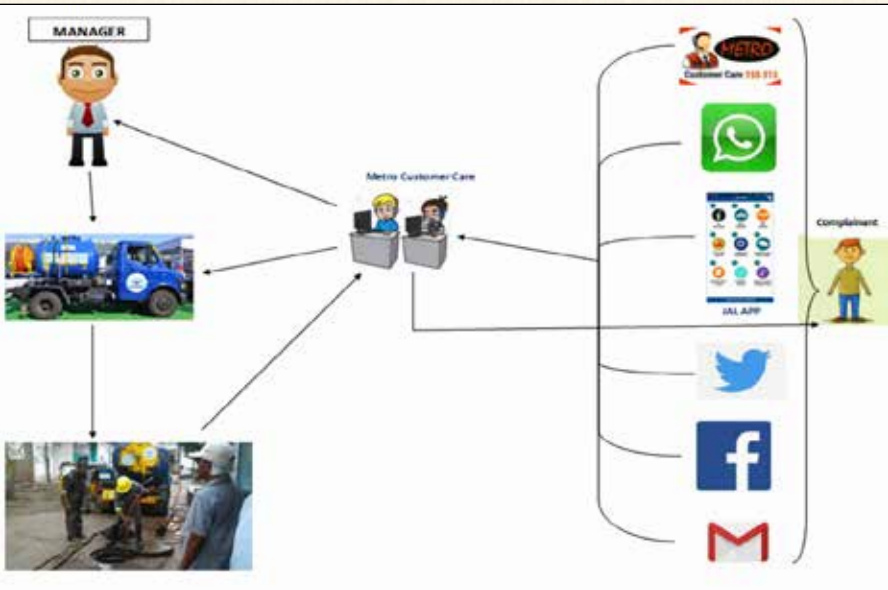
SANITATION

In order to provide easy access to the driver of mini jetting machines and also to attend the complaints in speedy manner it was proposed to provide mobile app to the drivers of mini jetting machines. As the mobile app was integrated with the complaints module, it would show the complaints registered under the jurisdiction. With the help of complaint details, the driver would be able to know the route map of the locations where the complaint is pending. After attending to the complaint, geo tagged photographs would be captured and the complaint gets automatically closed in the system. Based on the photos captured, tentative length gets calculated and shown to the manager for reference.



Jaldi Action Le (JAL) app

In this regard, HMWSSB has introduced 72 tailor made machines called Mini Sewer Jetting Vehicles. Personal Protective Equipments (PPEs) for seaware workers have been provided. new Standard Operation Procedures (SOP) were formulated and awareness and training sessions conducted for workers. HMWSSB has mandated contractors and the department officials to ensure no sewerage worker is let in any manhole.



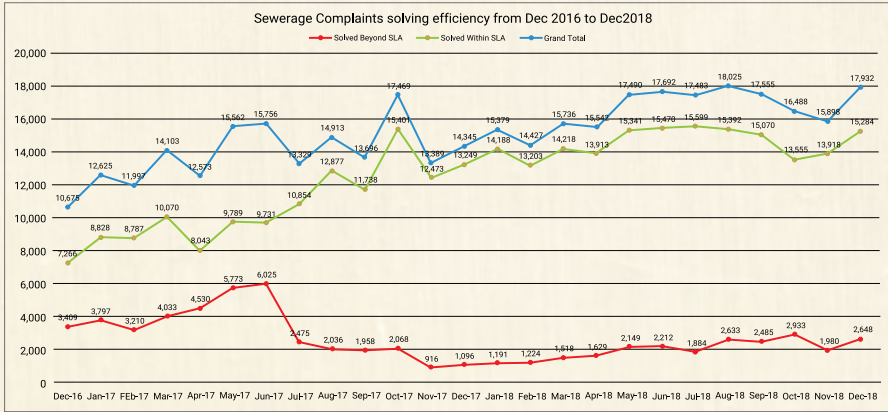
Grievance redressal mechanism through Mini Sewer Jetting Vehicles

Results achieved

Presently, sewers in the core city of Hyderabad (under jurisdiction of HMWSSB) are cleaned without any manual scavenging, which has made the entire city free from

manual entry into sewers. Sewerage of the peripherals of Hyderabad city, maintained by Greater Hyderabad Municipal Corporation, have also procured mini sewer jetting vehicles after the successful implementation of these vehicles by HMWSSB. This initiative has resulted in improvement in social and economic status of people who have owned the Mini Sewer Jetting Vehicles and people employed by them. Mechanization process improved street hygiene of the narrow lanes, where sewerage overflow reduced with decrease in operation and maintenance cost, towards repairs to manholes, replacement of damaged mains, de-silting works etc. The number of complaints addressed within SLA (Service Level Agreement) period has increased from 54% in May 2017 to 85% in Dec 2018. It also enhanced community satisfaction level and also the overall well being. Management of sewers has moved from reactive to preventive approach i.e. after their introduction, owing to easy mobility and flexibility, reduction in number of chronic complaints is observed, especially in lateral sewer lines located in narrow streets. Prior to introduction of Mini Sewer Jetting Vehicles, only reactive measures were taken up by manual cleaning and Bigger Sewer Cleaning Vehicles. Men and Women from deprived section of the society have been employed as drivers and helpers. Some of them have become owner of vehicle. This has led to safe, hygienic and dignified life for them. Numbers are as given in the table below:

		Men	Women	Total
Owner	Scheduled Caste	19	6	25
	Scheduled Tribes	6	0	6
	Total Owners	25	6	31
Employees	Scheduled Caste Helpers	64	0	112
	Scheduled Caste Drivers	48		
	Scheduled Tribe Helpers	0	0	3
	Scheduled Tribe Drivers	3		
	Backward Caste Helpers	11	0	21
	Backward caste Drivers	10		
	Other Caste	6	0	6
	Total Employees	142	0	142



Monthly Trend of total complaints solved within and beyond SLA (4 days)

Sustainability

This initiative has high impact on two key sustainability components i.e. social and economic well being and institutional operations. The scavengers have been uplifted economically as they own the mini sewer jetting vehicles. In the initial phase, vehicle owners can earn minimum income of approximately Rs. 20,000 per month (after repayment of loan installment and expenses related to the vehicle). This amount would gradually increase as the monthly loan installment tend to reduce over each month. Each vehicle has minimum of a driver and a cleaner hired by the vehicle and machine owner. This changes the social status of these socially deprived people from being an employee to becoming an employer. Such scenario generates entrepreneur skills and upgrades their social status. Similarly, the drivers and cleaners would receive approximately Rs. 16,500 and Rs. 14,500 per month respectively. From scavengers they are titled as cleaners, drivers and operators which generate a positive feeling and upgrade the societal status.

The innovative way of implementing this initiative has made HMWSSB develop successful model of inclusive service delivery, which means the work of sewer cleaning is not simply outsourced to a third party contractor, instead HMWSSB evolved an operational mechanism, which has the components of involving different actors in various roles to deliver better service quality and equip different stakeholders into the operation i.e. technology supplier, HMWSSB staff, manual scavengers, socially deprived people etc.

In addition, it has positively impacted the environmental well being by better resolution of sewer problem, with lesser overflow of sewer, faster de-clogging and cleaner roads and also an indication of higher hygiene and decrease in health issues.

Transferability

GHMC as well as Delhi Jal Board have initiated the replication of mini sewer jetting vehicles adopted by HMWSSB. Thus, HMWSSB has developed and demonstrated the technical and operational model for removing manual scavenging in its operations.

Lesson learned

Drawing from past experience, HMWSSB introduced Big Sewer Jetting & Suction Machines in cleaning of trunk sewers and main sewer lines in Hyderabad few years ago. It was observed that through introducing these machines HMWSSB could overcome the manual scavenging in few areas and also achieve effective and proactive cleaning of these sewers. Hence, HMWSSB took this approach as the basis for discussing and developing technology suitable for other sewer lines located in narrow and difficult to access areas of Hyderabad by introducing the Mini Sewer Jetting Vehicles. The chances of technological failure were thereby considerably reduced. Due to the greater confidence level on the technology, HMWSSB could quickly work towards development of effective implementation plans.



Awareness campaign




Awareness campaign

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23 Aug 2017, 16:50 HRS IST | Tomorrow a plea of flat-buyers of Jaypee infratech, a firm against whom insolv



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Delhi HC dismisses plea of jailed ex-Calcutta HC judge C S Karnan challenging constitution

To end manual scavenging, Hyd gets modern machines

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16:37 HRS IST

Hyderabad, Jun 5 (PTI) Aiming to eliminate manual scavenging in Telangana through technology, the Hyderabad Metropolitan Water Supply and Sewerage Board (HMWS&SB) today deployed 70 mini jetting machines in the city.

Telangana Municipal Administration and Urban Development Minister KT Rama Rao, who flagged off these machines at an event here, said the state government, as part of its 'Swachh Telangana' programme, has adopted technology to end manual scavenging.

"Improving the working and living conditions of scavengers has been the priority for the government," Rao said, adding that he would see to it that manual scavenging ceases to exist in state.


HMWS&SB, in association with the DICCI, (Dalit Indian Chamber of Commerce and Industry) inducted the 70 mini jetting machines at a cost of Rs 20 crore and the machines were handed over to the 'scavenging labour turned entrepreneurs'.

"It is an initiative conceptualised to transform manual scavengers to entrepreneurs. This move enables the elimination of manual scavenging and convert labour into an entrepreneur," DICCI Founder Milind Kamble said.

"Through this initiative, we have created 70 sanitary soldiers, who have been provided with 'bacteria-free uniforms' which is done first time in India. Our aim is to create another 5,000 sanitary entrepreneurs or soldiers in the next one year across the country," he said, adding that nearly 1300 manual scavengers died in the last three years across the country.

According to HMWS&SB officials, each machine costs Rs 26 lakh. While the SBI has given a term loan of Rs 20 lakh per machine, entrepreneurs have invested about Rs 6 lakhs each.

The mini vehicles can have easy access to the narrow lanes and smaller colonies to clear the choked sewer pipes (drainages).



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To end manual scavenging, Hyd gets modern machines

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The Prohibition of Employment As Manual Scavengers and their Rehabilitation Act, 2013: Prohibition of Employment as Manual Scavengers and their Rehabilitation Act 2013 came into force on 6 December 2013 across India except Jammu and Kashmir. The law prohibits employment of manual scavengers, manual cleaning of sewers and septic tanks without protective equipment and construction of insanitary latrines. The law also provides rehabilitation of manual scavengers and alternative employment to them in time bound manner. From then onwards, the construction and maintenance of the insanity latrines had become an offence, therefore no one could be employed or engaged as manual scavenger.

T-PRIDE scheme: T-PRIDE stands for Telangana State Program for Rapid Incubation Dalit Entrepreneurs incentive scheme. It provides special incentive package for SC/ST Entrepreneurs. Additional 10% investment subsidy on fixed capital investment is limited to Rs. 10.00 lakh to MSEs, solely owned by women entrepreneur (total investment subsidy limited to Rs.75 lakh only). Land will be allotted to SC / ST Entrepreneurs in proportion to their population in the state. It will be allotted on lease basis for a period of 10 years with lease rent @Rs. 100/- per annum per acre and Special fund for direct lending to SC/ST entrepreneurs.

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Stand Up India Scheme: The Stand Up India Scheme aims at promoting entrepreneurship among women and scheduled castes and tribes. The scheme is anchored by Department of Financial Services (DFS), Ministry of Finance, Government of India. Stand-Up India Scheme facilitates bank loans between Rs 10 lakh and Rs 1 Crore to at least one Scheduled Caste (SC) or Scheduled Tribe (ST) borrower and at least one

woman borrower per bank branch for setting up a greenfield enterprise. This enterprise may be in manufacturing, services or trading sector. In case of non-individual enterprises at least 51% of the shareholding and controlling stake should be held by either an SC/ST or woman entrepreneur.

Hyderabad Metropolitan Water Supply and Sewerage Board

Hyderabad Metropolitan Water Supply and Sewerage Board (HMWSSB) was constituted on 01.11.1989 under the provisions of Hyderabad Metropolitan Water Supply and Sewerage Act 1989 (Act No .15 of 1989), with the Functions & Responsibilities in the Hyderabad Metropolitan Area, viz., the supply of potable water including planning, design, construction, maintenance, operation & management of water supply system, and sewerage disposal and sewerage treatment works including planning, design, construction, maintenance, operation & management of all sewerage and sewerage treatment works.

The HMWSSB service area is spread over to an area of 688.24 sq. km., after merger

of surrounding peripheral areas i.e 10 municipalities. Vision of HMWSSB is to cater the needs of people of the area covered by GHMC in supply of safe drinking water and maintaining the sanitation facility with the vision of good health and disease free services. Functions of HMWSSB include supply of potable water including planning, design, construction, maintenance, operation & management of water supply system in GHMC area; sewerage, sewerage disposal and sewerage treatment works including planning, design, construction, maintenance, operation & management of sewerage system in core city area of GHMC and sewerage treatment works; and maintaining and safeguarding the water resources, assets of the HMWSSB and its proper utilization towards serving the consumers.

AWARD PHOTOGRAPHS



Door to Door Collection of Sanitary Napkins & Diapers & Best Out of Waste by Petlad Municipality



Say "No" to Manual Scavenging in Sewer Operations by use of Mini Sewer Jetting Vehicles by Hyderabad Metropolitan Water Supply and Sewerage Board



SANITATION

2011-2018

YEAR 2017-18

SMART BIN IMPLEMENTATION & VEHICLE MANAGEMENT by Bhopal Municipal Corporation

Bhopal Municipal Corporation (BMC) is responsible for collecting solid waste from various wards in Bhopal City by using its own vehicles. **This project aims at equipping all the vehicles with Fuel Sensors and GPS enabled devices** to track real-time movement of these vehicles at command & control centre and transforming all the waste / garbage bins into smart bins with system integration for Radio-Frequency Identification (RFID), Internet of Things (IoT) based application, to enable automated communication and improved efficiency of garbage collection with least latency time once the bin is filled. The

objectives project are point to point collection monitoring, verification and control, real time management of missed collection points, real time information of waste carrying, on-road / off-road maintenance of vehicles; accurate measurement of distance transited daily, route optimization (which will help in reduction of trip time & fuel as well as to serve more locations), transparency in civic administration and addressing citizen queries by the Support Centre by Management Information System (MIS).

NON-SEWERED SANITATION AND FAECAL SLUDGE AND SEPTAGE MANAGEMENT IN WARANGAL CITY by Greater Warangal Municipal Corporation

Greater Warangal Municipal Corporation (GWMC) has introduced many measures for improvement of sewerage and sanitation in the city. These include the Faecal sludge management regulation, public toilets, a sanitation resource bank, sludge treatment plant and coverage of WASH infrastructure in schools. **Having achieved Open Defecation Free (ODF) target, it is moving towards ODF plus**, which is total sanitation through safe management of faecal sludge, grey water management and behavior change communication. The city is supported by several participatory organizations – ASCI, BMGF, OICL, REL, SBI, Tide Technocrats, LEA Associates & LASA, GIZ, Egis, Rotary International, VASAVI and Firmenich.



E-toilet installation under WASH infrastructure

IEC CHHATTISGARH: CHHOTA BHEEM, CAPTAIN CLEAN CAMPAIGN by State Urban Development Agency

The Swachh Bharat Mission (SBM) aims at behavioral change of the masses to adopt better sanitation practices. Therefore, Information, Education and Communication (IEC) strategies, planning and their effective implementation are the keys to the success of Swachh Bharat Mission. The state of Chhattisgarh launched an IEC Campaign named 'Chhota Bheem - Captain Clean' for better performance of ULBs in Swachh Survekshan 2018 launched by Government of India. In this campaign, popular cartoon character named 'Chhota Bheem' was introduced as 'Captain Clean'. The vision behind launching this mission was **to create awareness and create spark among the youth to adopt best sanitation**

practices and at the same time, improve the social status of the workers involved at grassroots level. This campaign was launched and executed by State Urban Development Agency (SUDA) independently in all 168 Urban Local Bodies (ULBs) of Chhattisgarh State and the key role players in this mission were SBM brand ambassadors from schools, colleges, hospitals, farmers, religious preachers, local representatives etc. So far, the result of this campaign seems to be remarkable in context with utilization, allocation and impact as per Swachh Bharat Mission within a limited span of time.

YEAR 2016-17

ZERO WASTE MANAGEMENT IN TAMIL NADU by Directorate of Town Panchayats, Tamil Nadu

With the aim of achieving **zero waste towns** in the third tier of Urban Administration in 528 Town Panchayats, with a population of 80,74,628 (Census 2011) covering 6388.20 sq. km constituting 62.56% of the total urban area of the state, the Directorate of

Town Panchayats, Government of Tamil Nadu has demonstrated commendable progress in Waste Management, through technological support and behavioral change strategies for the citizens. Guided by the Government of India Vision 2023 and Swachh Bharat Mission,



Use of Bio-gas for cooking

the Directorate of Town Panchayats has implemented the MSW Rules 2016 in its towns through four principles of 'Reduce', 'Reuse', 'Recycle' and 'Recover'. It has been ensured that for every 150 households, a pushcart is provided for 100% door to door primary collection and further 10049 SHG members are involved in collection, segregation and processing of solid waste. It has been ensured that door to door segregated collection from commercial areas and bulk producers of organic waste is being taken in a separate trip to the Resource Recovery Park (RRP) for processing and waste collected in containerized push-carts from residential areas is being taken to the RRP without mixing, through secondary transport vehicles. Bio-composting has been successfully done in 466 Town Panchayats. As on

2017, 100.17 M.T per day of bio-compost is produced by Town Panchayats which makes an earning of Rs.39.42 lakh per month. Through vermi composting, 16.21 M.T per day compost is produced and through it Rs.10.29 lakh per month is earned by 188 Town Panchayats. Town Panchayats have initiated efforts to recover the land from the landfill sites through bio-mining food waste to energy. Bio gas generation has been implemented in 5 Town Panchayats.

An effective Information Education Campaign (IEC) campaign led by the Panchayat leaders in association with the Self Help Groups (SHGs) brought in effective communication amongst various stakeholders like the Residential Welfare Associations, Eco-clubs, Educational Institutions etc., to bring in this change and gradual progress towards zero waste towns in Tamil Nadu.



Vermi composting- Madukkaral Town Panchayat

YEAR 2015-16

SANITATION THROUGH PUBLIC PARTICIPATION IN MIZORAM by Directorate of Urban Development & Poverty Alleviation, Government of Mizoram and Young MIZO Association

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. The main objectives of the program in terms of sanitation was **to improve existing sanitation system of individuals, particularly septic tank, soak pit and provide community toilets with best technologies.** The objective was also to provide assistance to State Government/Urban Local Bodies in implementing sanitation regulations for sewerage improvement with best practice.

In this regard, YMA organized public awareness campaign in every branch in every locality. YMA in collaboration with the Government agencies/departments and local authority, organized public sanitation campaign in which free medical clinics were arranged. YMA branches maintained and preserved the village watershed/source by cleaning and repairing, as a regular activity. Schools and other Non-Governmental Organization (NGO) such as MHIP, MUP, and its partners in southern Mizoram i.e. MTP and CYLA also actively participated in the process. As a result of this initiative, mass communities were mobilized to have proper sanitation awareness and knowledge and some attitudinal changes have been observed among some communities.



Youth engaged in waste collection



Cleaning programme conducted by locals

INDIVIDUAL TOILETS UNDER NGSY – UNDER MAHATAMA GANDHI SWACHHATA MISSION by Jamnagar Municipal Corporation

Due to absence of underground drainage, many households had connected their individual toilets to single pits that were constructed without any lining and primary treatment capacities, resulting in ground water contamination and environmental degradation, with limited real time usage of these toilets. Demand survey for appropriate toilet was carried out by 35 different NGOs 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 and work was allotted to the NGOs / contractors. Under the scheme, JMC provides the contractor an amount of Rs. 14,000 per individual toilet, which includes a superstructure with a fitted pan, a substructure comprising of a septic tank with effluent disposal, and a water tank to store water. 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. As on 2017, in last two years, the JMC had 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 were kept under monitoring. 13,500 plus individual toilets have been constructed in 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.



Septic tank with effluent disposal

YEAR 2014-15

SABAR SHOUCHAGAR-LOW COST SANITATION SOLUTION by Nadia District Administration

Sabar Shouchagar (Latrine for All) is a model developed by Nadia District Administration (NDA) to eradicate the menace of open defecation in the district by ensuring latrine access and usage, through a community led movement financed by pooling in resources available with various existing sector specific schemes. For Rural areas, the funds were mobilized through Wage Employment Guarantee Scheme-MGNREGS and National Sanitation Programme - Nirmal Bharat Abhijan (NBA/SBM) at the rate of Rs. 4500 each per IHHL. To ensure ownership by the individuals concerned, beneficiary contribution was made mandatory with a minimum of 10% of the total cost. In urban areas, since the MGNREGA was not available, that portion was funded by the State Government and Rs 3000 per IHHL was contributed by the Urban Local Bodies (ULB).

The prime object was to bring-in behavioral change focusing on individuals and families practicing open defecation, focusing on transforming the community towards increased usage and weaning them out of the practice of open defecation. Along with the community, the stakeholders were District Administration, the ULBs, 3 Tier Panchayati Raj Institute (PRI) System, CBOs/NGOs who acted as Sanitary Marts (the construction executing agency), SHGs/Clusters, who acted as change ambassadors and student/teachers/faith organizations, who catalyzed the community mobilization. The 'Sabar Shouchagar' movement was initiated on 15th July, 2013 with a target to enable construction of 3.19 lakh household latrines (i.e around 15 Lakh people without access to toilet) across the district. From 15th July 2013 to 30th November 2014, NDA has been able to complete construction

of 2 lakh 62 thousand household latrines. The women SHGs have been selected and trained to become executors of the programme as Sanitary Mart, who ensured wider community participation, greater involvement and sensitization of women in the entire movement. Women thus became the catalyst and ambassadors of the programme for rest of the community.



View of the treatment plant

UNDERGROUND BINS FOR MUNICIPAL WASTE COLLECTION SYSTEM by Nagar Nigam Haldwani

To secure Municipal garbage in closed, clean, odour free, healthy and hygienic environment, the Municipal Authority i.e. Nagar Nigam Haldwani conceived to install underground bins as a part of the municipal solid waste management system. In traditional municipal solid waste collection system of the municipality, garbage used to be emptied on the roads and bins, then refilled, leading to corrosion of bins, garbage lying open and overflowing used to make filthy spots on the main road and bad odour emanating at the site with stray animals feeding on the waste. Thus there was unacceptability of dump bins due to waste accumulation in open with unhygienic manner. Due to apprehension in the existing garbage disposal, authorities initially faced resistance to install underground bins. With change in few locations, the bins were ultimately installed.

6 bins with capacity to store 1.5 tonnes of municipal garbage, including the closed body tipper mounted with crane with capacity to lift 1.5 tons of garbage was procured. Post installation training demonstration was given to the municipal staff to handle the underground bins including the closed body tipper. **Installation of underground bins has introduced secured collection of garbage, clean, healthy, odour free and hygienic environment resulting into ultimately achieving the socio-economic goals.** After installation, there has been general acceptance and change in perception to environment friendly underground bins. Installation has also led to reduced man-hours and cost reduction in Municipal Garbage collection and in administrative issues.



UNDER GROUND BIN NEAR BRIZLAL HOSPITAL



Underground bin for waste collection

ONE HOME-ONE TOILET PROGRAMME by Pune Municipal Corporation and Shelter Associates, Pune

Open defecation and unclean community toilets in urban slums create health problems and human dignity and safety violations. The project has been implemented in Pune, where 40% of almost 3.5 million city people live in slums. 5,00,000 slum-dwellers were forced to use dirty toilets or defecate in the open. Shelter's **'One Home-One Toilet Program' collected data and created detailed GIS maps of every slum in the city**, thereby understanding the state of toilets and open defecation, and waste management accurately and in-depth. Along with Municipal Authorities, Shelter used this data to create practical and viable sanitation plans to build individual household toilets in slums, conducting detailed surveys and running workshops to both educate people about sanitation, and understand their concerns.

The process for implementation of the project includes assessment of every slum in the city to understand coverage and condition of toilets, open defecation situation, sewerage networks and feasibility of building household toilets, then creating GIS Maps of every slum, creating visual and actionable representation of ground realities. After this, Identifying slums for intervention is done by discussing data with the Municipal Authorities and conducting detailed Socio-Economic Survey (SES) of every household to understand actual situation, problems and conducting needs of every family and mobilizing and engaging youth, women and children through workshops and discussions; and lastly constructing the toilets and instituting Waste Management Systems with door-to-door collection.

Shelter has built over 2,500 toilets in urban slums, which cost Rs. 20,000 per house, with the family paying 25-30% and Shelter contributing the balance in form of material. A community toilet for 100 families costs Rs. 20 Lakhs to build and Rs. 7-15 Lakhs to maintain for 5 years. 100 household toilets took a one-time cost of Rs 16-20 Lakhs to build leading to a saving Rs 11-15 lakhs in 5 years.



Awareness campaign on necessity of toilets



After image of the toilet

YEAR 2013-14

WASTE TO ENERGY SOLUTIONS by Jaipur Nagar Nigam

Based on Activated Sludge Process (ASP) technology, Jaipur Nagar Nigam (JNN) has established Sewerage Treatment Plant at Dela, which was comprised of two units and the bio-gas produced from both the units was allowed to flare up in atmosphere without any recovery/useful conversion in the initial stage. Later on, a power plant for generation of 8800 KWA energy per day was established for using bio-gas from STP plant unit-I in the year 2009. After completion of Unit-II in year the 2012, it was decided to use the bio-gas of second unit for production of CNG. The bio-gas of second unit is being used for production of bio-CNG by setting up a bottling plant under PPP mode. Land of 10000 sq. mt. has been provided to PPP operator on nominal lease rent of Rs. 1/ sq. mt. for a period of operation after commissioning of 25 years. As on 2014, minimum supply of bio-gas from STP plant was 6000 cu. mt/day for which PPP operator was to pay Rs. 6.15/cu. mt. of each unit of bio-gas supplied. The produced CBG has to be sold at lower price than the commercial LPG price. Considering the debt equity ratio of 75:25, a payback period of five years was worked out. The project is a **unique example to address the problem of environment pollution, employment using waste generation for produce useful energy, alternative fuel at affordable price and good model for revenue generation for to local bodies** which will help in meeting the O & M cost.

YEAR 2012-13

INTEGRATING THE INFORMAL SECTOR IN MUNICIPAL WASTE MANAGEMENT by Pune Municipal Corporation

Municipal Solid Waste Management and Handling rules 2000' by Supreme Court made door to door collection of waste, a mandatory service for Pune Municipal Corporation (PMC) reason being thousands of informal sector waste pickers were scavenging from containers, dumps and the landfill to retrieve recyclable waste and sell this to make a living. In 2008, the PMC signed a five year MoU with SWaCH (an informal sector initiative) to decentralize door-to-door collection and other allied waste management services. The objective was **to integrate the informal sector in door to door collection and to upgrade their livelihood.**

The members of the cooperative often worked in pairs and were in charge of door-to-door waste collection for 250-350 households. Waste pickers received segregated waste (separated between wet or organic waste and dry waste) from house-holds/properties and further segregated the recyclables to be sold in the recycle market; non-recyclable waste was dropped at feeder points. The model was energy efficient and environmentally benefitting. SWaCH collected waste from 74 Prabhags out of the 15 administrative wards of the city and more than 600 tons of MSW (Municipal Solid Waste) per day and about 130 tons of waste was sent for composting everyday and 150 tons was recycled.

All the above efforts led various achievements including lower administrative expenses with the cost being Rs.3/month/household as compared to an average of Rs.25 incurred by other cities in India that adopted professional waste management system. The contract with SWaCH has saved PMC more than Rs.12 crores per annum in waste handling cost. The waste pickers, with the help of additional recyclable waste buyers, reduced the amount



View of the treatment plant

of non-biodegradable waste sent to landfills by more than 12 percent. Through these diversions, waste pickers helped to reduce carbon dioxide emissions from transport as well as methane gas emissions released from decomposing of organic waste in landfills. The total number of households and commercial properties covered under door-to-door collection also increased from 1,40,255 to 3,80,000. Pune became the largest user fee based waste collection model in the country (Over 3,80,000 households).



Clean Cities Championship campaign

CLEAN CITIES CHAMPIONSHIP CAMPAIGN by Warangal Municipal Corporation

Warangal Municipal Corporation took up solid waste management initiatives for its Clean City Championship (CCC) campaign. The objective was to prove that **if right planning and strategy was done in the spirit of competitiveness, any municipality can provide 100% door to door collection** with substantial segregation (more than 70%) and the city can be completely cleaned within 7 days and operation cost can be reduced by more than 30%. It could be demonstrated that the most critical 6 steps out of 7 steps of MSW Rules 2000 can be implemented holistically and scientifically within 7 days. For seven days, it provided an opportunity to learn, lead, share and improve waste management services, not just to the local staff, but also to 154 teams of other municipalities.

It was an institutionally driven campaign to implement the MSW Rules through a strong participatory learning and leadership under a fair, transparent guidance and rules from experts. The host and participating municipal teams (field staff) were trained by the experts through field demonstration. Simultaneously, 7 innovative IEC campaigns were generating awareness, and creating a platform to learn, lead, share and improve their ways of working. The city achieved 100% door step collection with 70% segregation in 4 different types at a pre-given time. The major beneficiaries were households, who did not have to go to dispose of waste in open and children, whose open spaces were cleared for their recreation. For the first time, inter-departmental coordination was established for solid waste management, with town planning and engineering department also owned circles and started facilitating work as nodal officers for the given zones/circles.



Waste being collected



Segregated waste



Waste disposal



Clean Cities Championship Campaign

अटल अनुभूति उद्यान
* **द्रोणगिरी वा**
रामायण में उल्लेखित 'द्रोणगिरी'
जहाँ पर संजीवनी जैसी उ
औषधियाँ प्राप्त हुई थी उसी प्र
100 उत्तम प्रजातियों के
पौधे यहाँ रोपित किये

उज्जैन विकास प्राधिकरण





URBAN DESIGN AND REGIONAL PLANNING, INNER CITY REVITALIZATION AND CONSERVATION

2018- 2019



YEAR 2018-19

BHARAT RATNA SHRADHEYA SHRI ATAL BEHARI VAJPAYEE ANUBHUTI UDHYAN by Ujjain Development Authority

Ujjain Development Authority came up with an idea of constructing a unique park for the disabled community, enabling them to sense, feel, recognize, walk and enjoy like common men. As per the Census 2011, in Madhya Pradesh 15.51 lakh people, which account for 2.13% of the total population of 7.26 crores are identified with disability. Hence, such concept of a park came into existence and all the initial interactions and primary surveys resulted in the development of this iconic 'DIVYANG PARK', for the disabled, spreading over an area of 2.5 Hectares, which became the largest facilitated park in the world. 'DIVYANG PARK' is based on an integrated holistic development theme / approach and is also based on the concept of barrier free design, bringing together all the users under one umbrella.

Introduction

Bharat Ratna Shradheya Shri Atal Behari Vajpayee Anubhuti Udhyan developed by Ujjain Development Authority (UDA) is a **unique Park, enabling the disabled (physically challenged) communities to sense, feel and recognize, walk and enjoy like common men with his sense organs.** The idea for this unique park came into existence from the concept of such park being already developed in the district of Hoshangabad of Madhya Pradesh. The UDA officials visited the Science City of Kolkata and various other parks to understand the theme and also interacted with various NGOs (Aarushi Bhopal, Sneha Nagda (M.P)), Forest Department of Madhya Pradesh along with various horticulturists and experts of herbal and medicinal plants and landscape designers. All these interactions and primary surveys resulted in the development of the iconic 'DIVYANG PARK', for disabled spreading over an area of 2.5 Hectares (6.17 acres) which became the largest facilitated park in the world.

Background

Census 2011 has revealed that over 2.68 crore people in India are suffering from one or the other kind of disability. This is equivalent to 2.2% of the population. As per Census 2011 in Madhya Pradesh 15.51 lakh people, which accounts for 2.13% of the total population of 7.26 crores are identified with disability. Type wise distribution of persons with disabilities in Madhya Pradesh and the project district (Ujjain) is given in the table below.

Table 1: Distribution of persons with disability (in nos.) (Census 2011)

Type of disability	MP	Ujjain
Seeing	2,70,751	5,828
Hearing	2,67,361	6,197
Speech	69,324	1,390
Movement	4,04,738	11,013
Mental Retardation	77,803	2,673
Mental Illness	39,513	1,280
Any other	2,95,035	7,013
Multiple disability	1,27,406	3,474
Total	15,51,931	38,868



Entrance of largest facilitated park for disabled

Key dates

The project was started with the primary survey being conducted on 12th January, 2018 by the team of UDA, when they visited various sites such as the Divyang Park at Hoshangabad, Aarushi Sanstha for disable person (disable rehabilitation centre) and Sneh Sanstha, Nagda. After conducting the primary survey and having a fair idea of the essentials of planning a park for disabled, the work for the Divyang park started on 23rd February, 2018 with transplantation of existing trees and landscape development of the park. On 4th October, 2018, within a span of nine months, Divyang Park was inaugurated and received the Golden Book of World Record award for the largest facilitated park for disabled persons.

Main focus

The main focus of developing the park was to enable the disabled persons to sense, feel and recognize, which was also the very theme of the park. It also focused on holistic development, well-being and happiness for all the targeted age groups visiting the park. Moreover, development of the park was also done focusing on eco-friendly, environmentally sustainable and energy efficient practices.

Mobilization of Resources

Financial resources: Government of India and UDA mobilized funds for development of the park. The total project cost was Rs. 3.00 crore, out of which Government of India (Social Justice Department) contributed Rs. 1.94 crore and Ujjain Development Authority contributed Rs. 1.06 crore (after approval from Madhya Pradesh Government).

Human/ Technical resources: Planning and design of Divyang Park was done in association with architects, consultants, NGO's, administrative and technical teams of Ujjain Development Authority.

Process

Though the existing green areas in the city were in abundance, a well planned park with such facilities was not thought of before. Looking to the need for an open green space that is well planned for the use by common people and disabled of every age group, the idea of constructing a park to cater to such needs was taken up. As this was a very new concept for everyone, it was difficult to plan and implement it.

The whole project cycle was divided into five stages, starting with the concept and initiation stage. In this stage, the ideas taken from the primary study of other Divyang Parks was considered and planning was done accordingly. In the second stage, a detailed planning of the park was carried out. The land so decided for the park spreading over an area of 2.5 Hectares, had randomly planted trees. The main focus of planning the park was not to disturb the existing flora and fauna, during construction of walkways. The random pre-planted big trees were the main hurdles in the planning and five such trees were relocated with 100 % survival in the execution of development and construction work as per planning. The park is designed especially for disabled of various groups / age groups like children, women and senior citizens. After development of this park, the unique features, facilities and other specialties are appreciated country wide.



View of the park with Divyangjans and other users

This park is based on an integrated holistic development theme / approach. After all the designing and planning was done, the project was launched and execution work started. There was a strong check on the performance, and the development was also controlled and monitored to ensure the smooth development of the park. Finally, the project was completed and inaugurated on 4th October, 2018 and thrown open to public.

The fundamental principles, which have been followed in developing the park as per the standards / norms for various facilities for the disabled are standards for safety, convenience and usability. The concept of barrier free design is taken up to satisfy anyone, who is hampered in their mobility or functioning (as compared with a non- disabled person)

as a result of obstacles put in his way by the design of a building, the choice of hardware and equipment, and the arrangement of outside space. Some of the barrier free techniques adopted are as shown in the figure below.

Figure 1: Techniques adopted for Barrier-free environment



Visually impaired people using Braille guided railings

Result Achieved

Atal Anubhuti Udhyan has achieved Golden Book of World Record and has been awarded the certificate of Excellence stating that the Divyang Park is the largest facilitated park for differentially-able persons (The world record of largest facilitated part for differently-able people has been achieved by Ujjain Development Authority from Ujjain Madhya Pradesh India on 4th October, 2018).



View of the sensory park

The Park impacts socially and culturally all the gender groups, especially Divyangjan. This park is based on an integrated holistic development theme / approach. Moreover, the development of the park also was done focusing on eco-friendly, environmentally sustainable and energy efficient practices. The random pre planted big trees (five in number) were relocated with 100 % survival in the execution of development and construction work.

Sustainability

Financial Sustainability: Park is constructed through funding under the SIPDA scheme (Scheme for Implementation of Persons with Disabilities Act) of Government of India and Ujjain Development Authority's dovetailing fund.

Social Sustainability: The Park impacts socially and culturally all gender groups, especially Divyangjan. The park has also spread a general public awareness to respect disabled and senior citizens. Institutions and NGOs were sensitized about the world of Divyangjan and elders that visited the park.

Environment Sustainability: By adopting the renewable sources, pollution free techniques of construction, efficient use of water by drip irrigation and sprinkler system for nourishment of plants and trees, installing energy efficient L.E.D (Light Emitting Diode) and solar lights in the park environmental sustainability could be achieved. Solid waste, which is collected in the form of plant leaves and garbage was also converted into manure using compost pit.

Institutional Sustainability: Ujjain Development Authority emerged as a role model in present scenario in the decision making process. It also effectively assigned and carried out the project with the help of stakeholders such as Ministry of Social Justice and Empowerment, Govt of India under the SIPDA, NGO's- Aarushi Sanstha Bhopal & Sneha Sanstha Nagda (who work for the disabled), horticulturist, landscapers, herbal and medicinal plant experts, braille experts, local artist etc.

Transferability

The park is devoted to Bharat Ratna Late. Shri Atal Bihari Vajapayee, ex. Prime Minister of India. The mission is dedicated for all Divyangjan with a vision of their happiness and well-being. Focus was on integrated holistic health development and to make the park completely barrier free, wheel chair friendly, braille enabled along with sensory park, aroma park, open gym, basic amenities, fountains, light and sound system, braille engraved railings, tactile path way etc. The cultural and historical values of city Ujjain is also incorporated and brought Ujjain on the map having the World's largest facilitated Divyang Park. Similar approaches can also be taken up by other cities as well in order to create a friendly and equitable environment for the disabled.

Lesson learned

The project has been a lifetime learning for every stakeholder involved in it. The initial stages were crucial and full of tussle. The aim was to achieve development that should be eco – friendly and environmentally safe, which can sustain the existing vegetation and old plants. The development created tangible space for human and nature and not a single tree has been cut and the planning was done accordingly. A milestone has been achieved in bringing together all the users under one umbrella.

Ujjain Development Authority

Ujjain Development Authority is a top ranking Construction and Development Agency of Madhya Pradesh, which came into existence in 1977 as a successor to the erstwhile Town Improvement Trust, to work towards the housing solutions of the city. It is an autonomous body entrusted with the role of a catalyst for growth and development of Ujjain and is capable to manage its activities with its own resources.

Besides normal housing projects, UDA has diversified its activities to planning, designing, construction and development of almost all types of urban development projects (planned and executed projects for the development of health, education, sports and environment).



School children taken to Divyang Park

आज दिव्यांग पार्क का भूमि पूजन केन्द्रीय मंत्री गेहलोत करेंगे

दिव्यांगों द्वारा सांस्कृतिक कार्यक्रम की दी जायेगी प्रस्तुति, उविप्रा अध्यक्ष जगदीश अग्रवाल करेंगे दिव्यांगों का स्वागत

उज्जैन (अर्बनिका न्यूज़)। सामाजिक न्याय एवं अधिकारिता विभाग एवं उज्जैन विकास प्राधिकरण के संयुक्त प्रयास से दिव्यांग पार्क के विकास का भूमि पूजन कार्यक्रम केन्द्रीय मंत्री थावरचंद गेहलोत के मुख्य आतिथ्य में सम्पन्न होगा। मु.का.अ. अभियेक दुबे ने बताया कि 300 लाख की लागत से दिव्यांग पार्क के विकास का भूमि पूजन शनिवार को होगा।

शुक्रवार को प्राधिकरण कार्यालय में आयोजित बैठक में प्राधिकरण अध्यक्ष जगदीश अग्रवाल ने कार्यक्रम की रूपरेखा तैयार करते हुए बताया कि दिव्यांग पार्क के भूमि पूजन में दिव्यांगों द्वारा सांस्कृतिक कार्यक्रम भी प्रस्तुत किये जायेंगे साथ ही दिव्यांगों का सम्मान करते हुए विशिष्ट उपलब्धि प्राप्त करने वाले बच्चों को पुरस्कृत भी किया जायेगा।

आपने अवगत कराया कि दिव्यांग पार्क का विकास सामाजिक न्याय एवं अधिकारिता मंत्रालय भारत सरकार (सिपड़ा योजनागत) एवं उज्जैन विकास प्राधिकरण की संयुक्त



भागोदारी से दिव्यांग अनुभूति पार्क जिसकी कुल लागत 300 लाख (106.13 लाख उ.वि.प्रा. गैर योजना मद से एवं 193.27 लाख सामाजिक न्याय एवं अधिकारिता मंत्रालय भारत सरकार सिपड़ा योजना) के सहयोग से निर्मित होगा। जिसका क्षेत्रफल 2.449 हेक्टेयर निर्धारित है। पार्क में ओरियेंटेशन सेंटर (800 वर्ग मीटर) का निर्माण होगा जिसमें दिव्यांगजन प्रवेश करते ही बिना किसी के सहयोग के खेल लिलि

में ऑक्ति सॉर्निज के माध्यम से स्वतः निर्देश प्राप्त कर सकेगा। एरोमा पार्क (900 वर्ग मीटर) का विकास किया जायेगा।

अध्यक्ष अग्रवाल के नेतृत्व में प्राधिकरण द्वारा किये गये कार्य

- दिव्य अंग से विभूषित जन दिव्यांगजन कहलाते हैं। ईश्वरीय सहयोग से शरीर को इन्द्रियों, कर्मेन्द्रियों में सुक्ष्म या दीर्घ अक्षमता होने पर भी

छड़ी इंद्रीय जागृत (क्रियाशील) रहती है। समाज में दिव्यांग जन भी मुख्य भाग से जुड़े रहे उनकी शारीरिक, मानसिक शिक्षा विकास आदि की जिम्मेदारी हम सभी की है। दिव्यांगजनों के साथ साथ बरिष्ठजन भी सम्मिलित रूप से आमोद प्रमोद आदि की अनुभूति प्राप्त करें यही संकल्प है दिव्यांग अनुभूति पार्क का। जिसमें बिना किसी के सहयोग के भी गंध, स्पर्श,



श्रवण आदि माध्यम से पार्क में घुमने प्रकृति को महसूस करने का सुखद अनुभव सभी को प्राप्त होगा।

- उज्जैन शहर के प्राचीन श्री महाकालेश्वर मंदिर स्थित पुराने जीर्ण-शीर्ण सभा मण्डप को तोड़कर दो मंजिला नवीन सभा मण्डप का महत्वपूर्ण कार्य प्रारंभ किया। इस सभा मण्डप के निर्माण के दौरान निर्माणाधीन परिसर के पुरातात्विक महत्व के छोटे-छोटे मंदिर एवं शिलालेखों को उनके पुरातन स्वरूप में ही रखा जाकर निर्माण किया जाना अपने आप में अत्यंत ही चुनौतीपूर्ण कार्य है।

- चिंतामण जवाहिरा स्थित श्री महाकालेश्वर मंदिर प्रबंध समिति की भूमि पर वेदाध्ययन हेतु विशाल वैदिक विद्यालय, श्री महाकाल को लड़कू प्रसदी निर्माण हेतु दो मंजिला भवन एवं गौशाला

का निर्माण पूर्ण कर उक्त स्थल पर स्टाफ क्वार्टर, सभा स्थल व अन्य कार्यों का निर्माण जारी है।

- कुछ ही दिनों पूर्व महामहोम राष्ट्रपति द्वारा महाकालेश्वर मंदिर को दिव्यांगजनों के आवागमन की सुविधा हेतु पूर्णतः बाधारहित परिसर बनाने के लिए सम्मानित किया गया। यह ज्ञात रहे कि यह कार्य प्राधिकरण के द्वारा केवल 08 दिनों में पूर्ण किया गया।
- स्मार्ट एवं ग्रीन कांसेप्ट पर दि. 02 एवं 03 नवम्बर 2017 को मुंबई में आयोजित अंतराष्ट्रीय सेमिनार में प्राधिकरण ने सहभागिता की।
- प्राधिकरण प्रथम क्लोजेड कैम्पस योजना (100 आवासों को) पर तीव्रता से कार्य कर रहा है।
- स्वच्छ पर्यावरण की दृष्टि से प्राधिकरण ने अपनी योजनाओं ने 8700 पौधों का रोपण करवाया जिनकी शत प्रतिशत जीवितता है साथ ही प्रत्येक आवास के साथ दो पौधे लगाने का कार्य भी जारी है।

MP's second Divyang Cognition Park to come up in Mahakal City

Gehlot performs bhoomi puja of park to be developed @ Rs 3 crore

● FP NEWS SERVICE
Ujjain

Union minister for social justice and empowerment Thawar Chand Gehlot, energy minister Paras Jain, Rajya Sabha member Satyanarayan Jatiya and others performed bhoomi puja of Divyang Park at Vikram Vatika on Saturday. It will be the second park after Hoshangabad in Madhya Pradesh.

The Union minister said that a factory of Alimco would be set up in the city. The Rs 125 crore worth factory would be inaugurated on March 18, 2018. He further said that five types of auxiliary equipments would be built and supplied to West India. Giving information about sanction of additional Rs 3.30 crore to build training institute in Divyang Park, he said that disabled from all over the country would be provided training at this training centre. In his welcome speech,



Divyang children stage a cultural programme during bhoomi puja of Divyang Park. FP PHOTO

Ujjain Development Authority (UDA) chairman Jagdish Agarwal said that Divyang Cognition Park would give new identity to the city. He said that efforts to build the park had been continuing for the last one year. Two-and-a-half acre has been provided by the district administration for the park.

He said that the state-of-the-art park would be built at a cost of Rs 3 crore. The UDA's contribution would

be Rs 1.06 crore. An aroma park, orientation centre, sensory park, hall of fame, audio music centre and open air theatre too would be constructed in the park. Signboards in the park will be audio enabled to help disabled. All pathways will be made with direction guiding tiles. Adequate resting places too will be provided along with drinking water facilities and toiletries. Later, children of Children of Sneha

Institute Nagda, Manovikas Special School Ujjain, Government Manovikas School, Government school for blind and deaf and Sevadharm deaf dumb institute performed a dance, while Sevadharm student Bhola Agrawal presented welcome song. Shailendra Vyas conducted the programme and UDA CEO Abhishek Dubey proposed vote of thanks.

MORE UJJAIN NEWS ON P5

AWARD PHOTOGRAPH



Bharat Ratna Shradheya Shri Atal Behari Vajpayee Anubhuti Udhyan by Ujjain Development Authority



URBAN DESIGN AND REGIONAL PLANNING, INNER CITY REVITALIZATION AND CONSERVATION

2011-2018

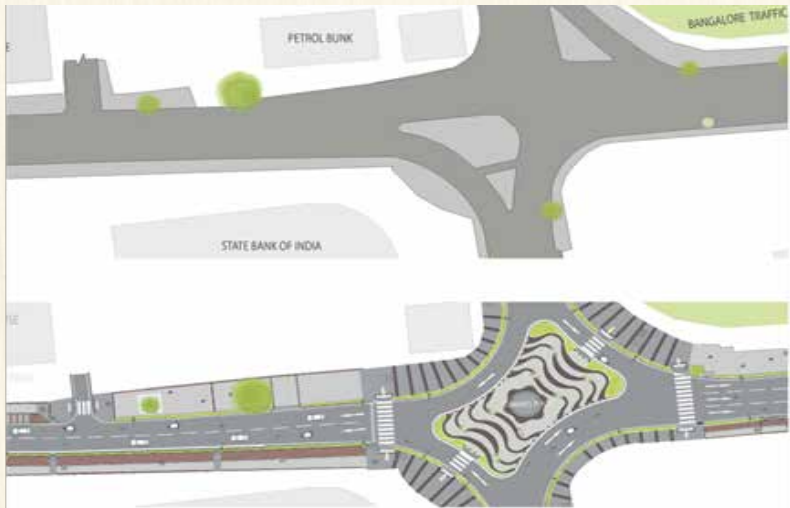
YEAR 2017-18

TENDER S.U.R.E. - SPECIFICATIONS FOR URBAN ROADS EXECUTION by Jana Urban Space Foundation

Jana Urban Space Foundation (Jana USF) authored and published **the first set of guidelines for the design, procurement and execution of urban roads in India** titled 'Tender SURE' (Specifications for urban road execution) in 2011. Based on its merits, the Government of Karnataka allocated Rs. 200 Crore in its 2012 budget to redevelop 50 roads in Bangalore as per Tender SURE guidelines. 7 of these roads have been designed and monitored by Jana USF as a proof of concept for the Bangalore Municipal Corporation (BMC).



Roads designed by Jana USP



Junction of St. Marks Road and Museum Road after the Initiative

JM ROAD REJUVENATION PROJECT UNDER PUNE STREET PROGRAMME by Pune Municipal Corporation

Pune Municipal Corporation (PMC) has undertaken various transportation proposals to achieve zero fatalities, increased modes share of public and non-motorized transport and reduced use of private vehicles as per the targets set by Comprehensive Mobility Plan (CMP) for Pune City. In line with the above principles, PMC has undertaken a number of initiatives in the field of sustainable transportation. The Jangali Maharaj (JM) Road Rejuvenation project is the first project under 'Pune Streets Program' (PSP), which includes redesign of street of 100 km length in the city. The aim of the program was **to create a city wide network of world-class streets, with priority for pedestrians, cyclists and public transport**. PMC has put substantial investments in its own annual budget to ensure implementation of PSP.



People using the redesigned footpaths for recreational activities



Wide-shaded footpaths with seating and landscaping



Shaded street with wide footpath, cycle track and seating

YEAR 2015-16

REJUVENATION AND REDEVELOPMENT OF RABINDRA SAROBAR by Kolkata Improvement Trust

Located at Southern Avenue area of Kolkata, Rabindra Sarobar Lake with an area of 192 Acre, is a manmade lake which was dug in 1920's. Even though Rabindra Sarobar has been a cultural hotspot and maintains a very important place in the heart of the residents, the vacant lands of Rabindra Sarobar became place for open defecation, garbage dumping and other activities and as a result, the quality of environment and ecosystem of the area has deteriorated gradually. With the aim to **restore the lake, the master plan as well as DPR was prepared** by Bengal Urban Infrastructure Department Ltd. (BUIDL) and the complete project with a project cost of Rs 20.00 Crore, has been funded by Urban Development Department of Government of West Bengal (GoWB).

The main components conceptualized for rejuvenation are boundary fencing of the total lake area and complete lake bank promenade with sufficient light. The promenade has been created by relaying attractive looking paver blocks and placing heavy bollards with light along the bank. The soil of the tree roots, which was eroding with rainwater, were guarded with tree beds and are converted into beautiful seating areas. As a result, the activities, which moved away from Rabindra Sarobar have been restored and the social, cultural, academic activities are back. The park has seen new species of birds coming, death of fishes and other water species has also stopped.



Image after implementation of the project

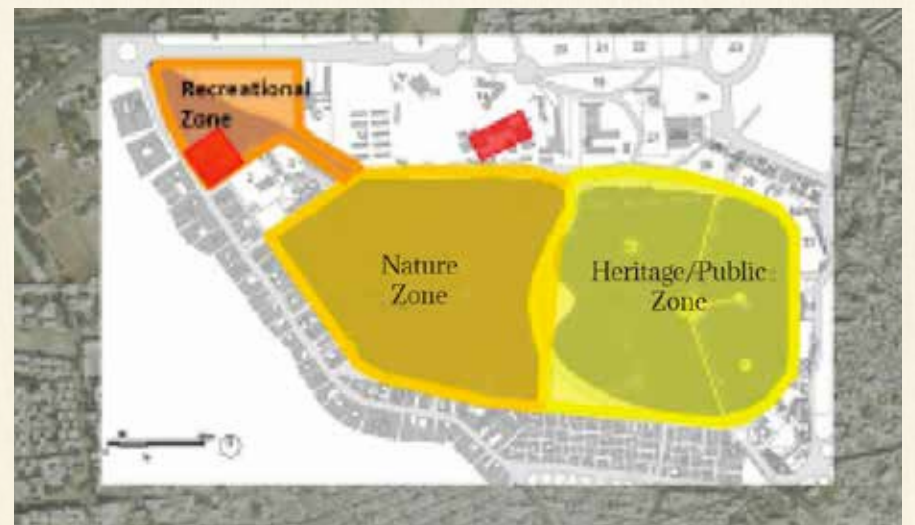
BEAUTIFICATION AND REVITALIZATION OF RANMAL LAKE by Jamnagar Municipal Corporation

A beautification and revitalization work was carried out by the Jamnagar Municipal Corporation for the peripheral area around the Ranmal Lake located within the city of Jamnagar, Gujarat. The vision behind the project was **to restore and stimulate the 'breathing spaces' for the inhabitants of the city while 'remaking a home' for the migratory birds and enhancing the city's identity by reactivation of its 'heritage structure.'** The principal objective included the improvement in the pedestrian movement around the Ranmal Lake and to add various supporting activities, which would enhance the value of the existing historical structures, one of them being Lakota Fort, situated in the centre of the lake. The project covered an area of 48,000 sq.m including 30,000 sq.m of landscaping and 18,000 sq.m of parking.

The first and foremost priority of the project was to demarcate the pedestrian and vehicular traffic areas. The master plan was prepared on Heritage Theme in first phase. The second and third phases were planned on Nature and Recreation Theme respectively. All these efforts were directed towards transformation of the project site, making the lake edge cleaner and hygienic. An increased activity of the migratory birds was also noticed. The area became more responsive towards children and physically challenged people as the vehicular zone was converted into pedestrian area.

Traffic congestion was reduced to a great extent as the hawkers selling food items and small articles around the lake edge were shifted to food plaza built around the jogging track.

With the restoration works done for the jharokas, the lake edge enhanced the beauty of the historic Lakota fort that was in the centre of the lake.



Proposed layout plan of Ranmal Lake

CONSERVATION, RESTORATION, CONSOLIDATION AND REHABILITATION OF KHAMBALIYA GATE by Jamnagar Municipal Corporation

Khambhaliya Gate was a 250 year old heritage and a protected monument. Due to negligence, the gate was in dilapidated condition, also being affected in the earthquake of 2001. Jamnagar Municipal Corporation (JMC) **considering its moral responsibility, took up the project to restore and maintain the gate.** The proposal was prepared with the objectives of transformation of upper storey for heritage gallery and ground storey for pedestrian passages and two walkway galleries.

To restore protected monuments, JMC signed MoU with State Archeology Department, Gujarat for its supervisory role and guidance. During execution, many challenges were faced such as working in the dense neighborhood and beside heavy traffic movement, where many complaints were raised by the stakeholders. De-vegetation over the monument was itself a challenging task.

Hence, JMC had decided to appoint a project management consultant to monitor, supervise and execute the project, so that every minor detail would be taken care of with utmost precision and professionalism. Moreover, the project was unique in itself and much on aspiration based. The efforts of JMC resulted in more awareness among the citizens for the heritage monument. 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 team displayed the whole process of execution and its overall methodology in one of the galleries of the monument, so that others could be encouraged and easily replicate the model.



Khambhaliya Gate before restoration



Khambhaliya after restoration



During construction of the gate (interior view)

YEAR 2014-15

INNER CITY REVITALISATION AND CONSERVATION – Chennai Street Design Project by Corporation of Chennai

In June 2012, Corporation of Chennai adopted a radical approach towards redesigning all of its bus route roads in their flagship initiative - Chennai Street Design Project. This project which **promotes non-motorised transportation, lays emphasis on designing streets for all users and activities.** It primarily prioritises safety, comfort and convenience of pedestrians by developing wide and continuous footpaths on all bus route roads. The Corporation aims to redesign all its 471 bus route roads under this project.

Despite poor pedestrian and cycling infrastructure in the city, over six million trips are made on foot and cycle everyday in Chennai—one third of all trips in the city. Further, Chennai has the highest road fatality rate in the country and pedestrians as well as cyclists are the most vulnerable.

Streets are public spaces, whose designs affect the citizens residing along the project. To understand the public concerns upfront, obtain inputs on the conceptual designs evolved, build consensus towards final designs and avoid obstacles during construction, the Corporation held various workshops and consultative discussions with different stakeholders like Policy makers, Institutions, Architectural Professionals, Street Vendors etc.,

In the planning and designing phase, the Corporation realized that maintaining the width of the carriageway would be critical for smooth functioning of the street. The traditional design process used maximum carriageway width and used the footpaths as mere road margins. This had resulted in bottlenecks and traffic jams. By reversing this process, the footpaths took on varying widths, which would then be able to accommodate outdoor furniture and other elements in wider areas. During the construction phase, many challenges arose at the site. Since many stakeholders were involved, there were occasions when responsibility and complaints were passed around. Hence, the Corporation had decided to hire a Project

Management Consultant to monitor, supervise and execute the footpath project so that every minor detail could be taken care of with the utmost precision and professionalism. Lastly, the Corporation strongly agreed that the entire project would be futile if no measures were taken to maintain these high-quality footpaths. Via a public-private-partnership, Confederation of Real Estate Developers' Associations of India (CREDAI) was appointed to maintain the completed footpaths, which included daily maintenance like sweeping and cleaning, as well as minor repairs, as and when required.



Haphazard parking with narrow footpaths forced pedestrians to walk on the carriageway



Urban realm transformed with wide and continuous footpaths, and organized on-street parking



Design workshop conducted to introduce the Corporation engineers to the latest principles of street design

YEAR 2013-14

URBAN CONSERVATION & REVITALIZATION OF HAZRATGANJ PRECINCT, LUCKNOW, by Lucknow Development Authority

Hazratganj in Lucknow is one such places with a **rich legacy and heritage (200 year old legacy) and ‘reinventing and updating itself’ in form of up market High Street of Lucknow.** Not only was Hazratganj the center of the Lucknowites’ commercial life, it was also an important part of their social life. In the past 30 years, the rapid urbanization has resulted in growth of suburban centers with shopping malls and multiplexes outside the traditional areas, which were more convenient and accessible. The business in Hazratganj went low, forcing traders to shift or extend their activity to malls. Neglected buildings, dangling hoardings, masked shop fronts hiding beautiful architectural facades, had reinforced the public perception that Hazratganj was not a happening place, consequently sinking the spirit of the street under its own apathy. The prime issues on Hazratganj Street before the intervention were: lack of pedestrian facility and public amenities and the Domination of skyline by large scale hoardings, signages and banners. The building façades and architectural details had been screened off with advertising boards, indiscriminate parking and traffic chaos, encroachment and lack of organized open public spaces collapse of infrastructure services.

The completion of 200 year of Hazratganj was the spark that initiated both citizens of Lucknow and Government to re-awaken the past and save it before it was lost. The objective of the project was to revitalize not only the tangible aspect, such as street facade and street elements, but also conserve intangible aspect of Hazratganj.

The objective was to restore the characteristic identity of the street by improving the overall character of the street, strengthening the street infrastructure, vehicular circulation, pedestrian activity and other public utilities. The aim was to make Hazratganj a sustainable

market in view of present economic pressure and competition by newly developed markets.

The area has become a tourist spot with every visitor coming to Lucknow visits this place at least once to experience the revived ‘Sham-e- Awadh’. The property owners on the street themselves renovated their own premises on the basis of the standard code for buildings. A uniform code for the architectural façade stating the colour scheme of the buildings and the purposeful strategy releasing the architectural features of the street façade was followed. A signage system was developed and was agreed upon by the stakeholders, and applied to the street. These measures helped a lot to achieve the uniform character on the street and a sense of an individual precinct within the surroundings. It is a unique example of synergy between the stakeholders and implementing authorities in the direction of successful coordination of the work.

For instance, it was the first time that multinational companies, which have a standard colour scheme for their logos and signage, respected the spirit of the project and followed the colour scheme recommended for the street façade. Well-known brands, which often vie for retail space in shopping malls, opened their exclusive stores in the revitalized premises, which explained the success of the project and stated a learning example. The success of the project clearly states the sensitivity people have towards their heritage and the potential it can generate when developed with an organized strategy.

Mall road, Mussoorie, Main Street of Amritsar, Streets leading to Taj in city of Agra are being revitalized based on the concept of Hazratganj. The project became inspiration in urban renewal and revitalization of heritage precincts of other cities of Uttar Pradesh and other states as well. The project attained mass public attention, locally and even nationally.



Restoration of street features and walkways



Precinct after restoration

INNER CITY RENEWAL/REVITALIZATION by Gangtok Municipal Corporation

Gangtok being the capital and the largest town of Sikkim with a population of 1,00,286 (Census 2011), had huge significance with respect to administrative functions, educational centre, a tourist town and hub of trade and commercial practices. With a major rural urban migration that led to unplanned growth, the basic amenities and urban services were affected to a great extent. Gangtok was also the main tourism hub of Sikkim. So in order **to preserve the serene beauty of the town, efforts were made to improve the existing infrastructure, with the techniques of urban renewal and redevelopment.**

A project was taken up by Gangtok Municipal Corporation declaring the Main Business Centre, MG Marg as a No Vehicular Zone, with the project commencing in June 2007 and completed in December, 2008. M.G. Marg was the main Business Centre that used to be a double lane road and the main township of Gangtok was established along its either side. There were problems of congestion, conflict between vehicles and pedestrians, lack of adequate space for street parking facilities, encroachment of open spaces and degradation in the quality of life with rising air pollution from vehicular emissions. After implementation of the project, the traders' fear of loss of business turned out to be unfounded as the new look of the area attracted more people into the market resulting in more business for the traders. The rental value of the properties increased many folds after construction of the walking mall as the renewed and remodeled infrastructure added new looks to the town, which gave a new ambience to the surrounding.

Gangtok Municipal Corporation also took initiative to construct the bridge which eased the problem of the locality at Deorali as people were hit by cars while crossing road and public of the locality demanded pedestrian over bridge for safe crossing of the road. The project commenced in February, 2012 and was completed in June 2013. The biggest beneficiaries of the project were students, common men and the residents of the localities facilitating safe walking for public along the National Highway.

Gangtok Municipal Corporation initiated to remodel and repair public paths at Tibet Road and Kazi Road of the city which falls under Tibet Road Municipal ward of the Corporation. Considering its importance, the Corporation undertook its repairing and re-modeling.

The biggest lesson learned during execution of the initiative are that unless the stakeholders are not involved in any project and people are not sensitized about the purpose and benefits of the same, it will be extremely difficult to execute the project on time and people may not reap the benefits of it.

Remodeling of MG Marg, construction of Pedestrian Butterfly over bridge at Deorali, improvement of public footpath at Kazi Road, Gangtok and construction of 12 km public footpath along the National Highway, Gangtok are the assets created for the local residents and the tourists by Gangtok Municipal Corporation. Inquiries were received about the projects from different quarters; however, replication of same varies due to topography and implementing authority.



After revitalisation



Image of the city revitalization project before revitalisation



Image of the city revitalization project after revitalisation

YEAR 2012-13

E-INCLUSIVE PLANNING & IMPLEMENTATION IN MP by Urban Administration and Development Department and City Managers' Association

Government of Madhya Pradesh decided to formulate City Development Plan for every town for which a detailed strategy was framed out. It was decided to keep the process transparent by adopting e-monitoring model and presenting all the information/status on website.

Earlier, there was no Development Plan in almost 225 towns of Madhya Pradesh and no 'To the scale' map in more than 200 towns were there. Madhya Pradesh did not have a dedicated State scheme for infrastructure (water supply, sewerage, roads etc.) and there was poor management of accounts and improper disbursement of funds for infrastructure works. After analyzing the need for planning interventions in small and medium towns along with their existing technical capacities, it was decided to initiate the planning process in a robust and centralized manner. The Urban Administration and Development Department (UADD) alongwith City Managers' Association, Madhya Pradesh (CMAMP) decided to implement the CDP project in a phased manner. UADD and CMAMP did not have adequate in-house resources to prepare CDPs, therefore selection of a consultant was decided.

A detailed strategy for implementation of CDP (of plan preparation process) was made. It was decided to work on e-monitoring model and 'www.mpcdp.com' portal was developed. The aim of the exercise was to support various cities/urban local bodies of Madhya Pradesh in preparing CDP for their respective cities and to provide a reliable, efficient, friendly and easily-accessible means for monitoring and implementation. The target users were mostly not well versed with English language; hence the contents were designed with an option of browsing in Hindi language too. The information was presented in a simple and user-friendly manner.

As a result of the above initiative **the digital maps of the town were made available on web portal at a single click.** The project was used by all the 7 Divisional Offices, 50 District Offices, 380+ Urban Local Bodies, 150 national and international consultancy firms, as well as citizens for monitoring, participation, information flow and tracking. The e-inclusive approach provided a convenient platform to review the project progress, get stakeholder's feedback and disseminate information to the project consultants and cities.

YEAR 2011-12

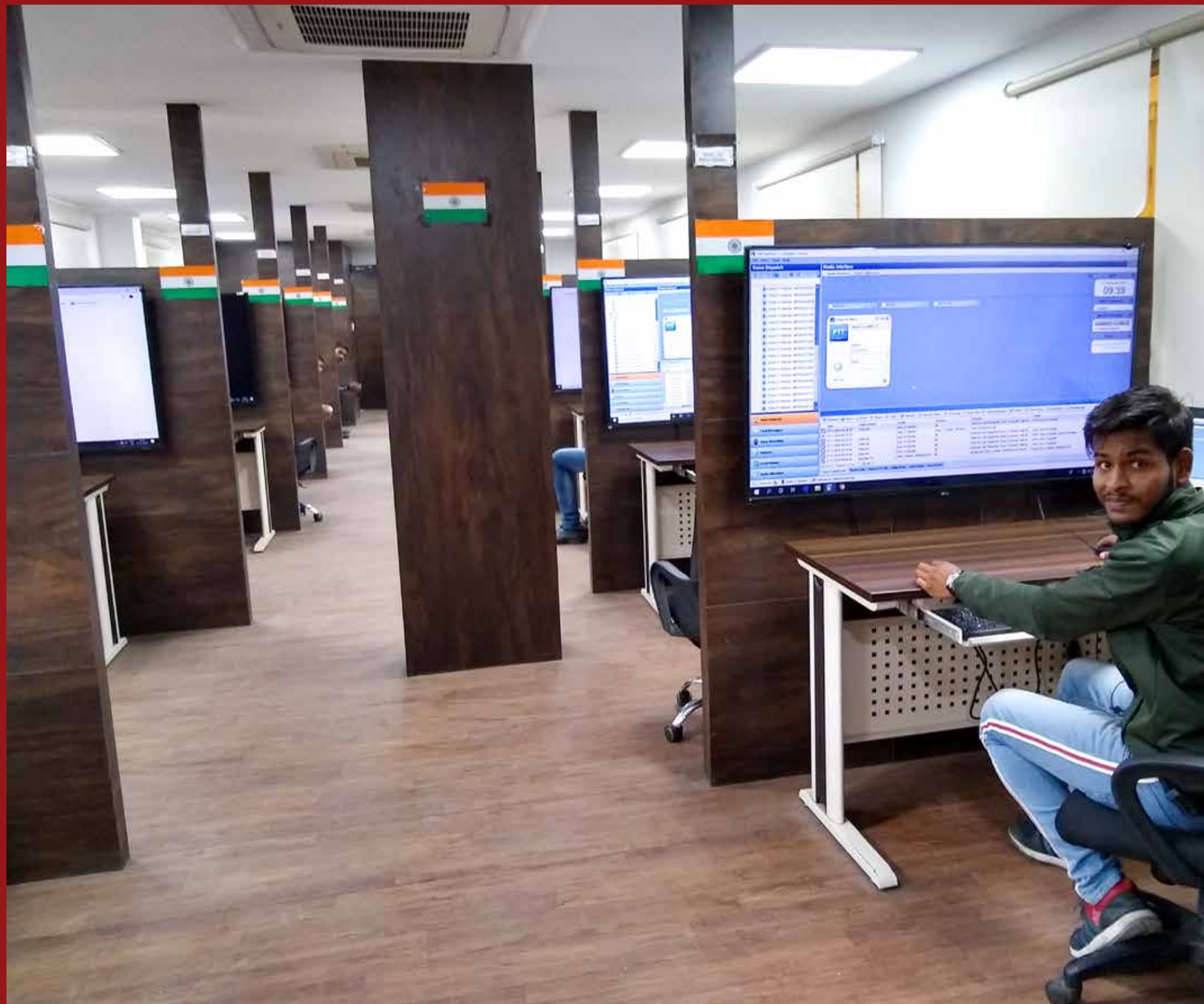
DEVELOPMENT OF AMBER PALACE by Amber Development and Management Authority

The 16th Century historic Amber Palace which was a protected monument of State Archaeology Department, Government of Rajasthan, was in a depleted condition. Approximately, 60-70 percent area of Amber Palace was encroached upon by local inhabitants and being used for their personal purposes and altered as per their requirements at many places. To restore the Palace, Government of Rajasthan appointed a Conservation Architect who prepared a detailed report 'Amber Palace Conservation Initiative – 2005'. In order to implement 'Amber Palace Conservation Initiative – 2005', Government of Rajasthan established Amber Development and Management Authority (AD&MA) on 10th November, 2005. The AD&MA started the conservation, restoration of Amber Palace by deputing expert technical persons, contractors in the field and the entire work was initiated as per traditional practices, materials and techniques. AD&MA removed all the encroachments in year 2006-2007 and demolished all the alterations made by the occupants subsequently.

The priorities that were listed in the report of 'Amber Palace Conservation Initiative – 2005',

are removal of unauthorised occupants and dismantling of later, additions, identification of historic layers as per archival reports, maintaining of architectural significance and quality, adoption of methodology as per traditional practice and materials, detailed damage assessment survey, repair of structural weaknesses and roof leakages.

The conservation initiatives has enhanced the palace's life and improved its accessibility for tourists. Facilities like adequate parking, international level cleanliness, facilities, restaurants, redeveloped historic garden, audio-guide, etc. were provided. Further to this initiative, the Government of Rajasthan took up several other conservation projects of forts, temples, market places etc., While doing the conservation of Amber Palace, training was also imparted in traditional building works to the masons, contractors, engineers and architects as it was felt that only few persons knew the techniques of traditional building material and methodology. Through this training, the state could get many masons, contractors, engineers and architects for future conservation works.





URBAN GOVERNANCE

2018-2019



YEAR 2018-19

PRE-AUDIT/INTERNAL AUDIT IN 168 ULBs of Chhattisgarh by State Urban Development Agency, Chhattisgarh

The role of ULBs regarding financial management became important due to inability of ULBs to develop infrastructure on account of lack of funds and with the launch of various governmental schemes which needs to be implemented at ULB level. In this context, aimed towards self-sustainability by optimum end use of grants of ULBs, deduction and rectification of irregularities in revenue process compliance, systemized control on payment process and ensure transparency in urban governance led to the launch of Pre-Audit /Internal Audit in all 168 ULBs in the state of Chhattisgarh. After developing a model for pre-audit and internal audit, the audit team was authorized to be an integral part of ULBs and the process has been executed by dividing whole state into 5 clusters. As a result of this initiative, FDR along with the balance was identified and credited back. Areas for self-sustainability have been evolved by the ULBs through increasing revenue sources with audit initiatives and advice, reduction in unnecessary expenses.

Introduction

Establishing internal control is a continuous exercise, meant to reduce/eliminate/detect every possibility of revenue leakage, misappropriation, underutilization of assets, fix responsibility and promote accountability in staff and ultimately optimum utilization of enterprise resources, available opportunity. Absence of these always affects the department adversely in one or another way. Chhattisgarh State Urban Administration and Development Department through its Nodal Agency State Urban Development Agency (SUDA) had taken an initiative and implemented the Practice of Pre-Audit/Internal Audit in 168 ULBs of the state which includes 13 Municipal Corporations, 44 Nagar Palika Parishads, 111 Nagar Panchayats, having a total population of approximately 65 lakh. **The project has been implemented by dividing the State into 5 divisions namely Raipur, Bilaspur, Ambikapur, Bastar and Durg.**

Background

In a department, a process runs by procedures and system as defined by the department. Further, it is also necessary to evaluate periodically whether the control procedures are properly working, and are being followed by the concerned persons. Violation of procedures may be done intentionally or by instance, which in shorter period may not cause any revenue loss, but continuous violation may cause serious implication in revenue generation. Thus, a requirement was felt by the ULBs to take special attention on these issues. The national reforms agenda for urban sector includes reforms in municipal accounting practices and strengthening of financial discipline. Even after the 74th amendment to the Constitution of India, the ULBs of Chhattisgarh were not able to develop infrastructure on account of lack of funds. With the launch of schemes like Jawaharlal Nehru National Urban Renewal Mission (JnNURM), Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT), Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Pradhan Mantri Awas Yojana-Housing for All (PMAY-HFA), Swachh Bharat Mission (SBM), it has become necessary that the ULBs had at their disposal the financial resources to be able to effectively discharge their duties. Thus, the role of ULBs regarding financial management became important and with this, the need for better financial practices emerged.

Hence, Pre-Audit and Internal Audit procedures were launched in ULBs to make effective check on financial monitoring, which was untouched till that time. Also, as per the recommendations of the 13th Finance Commission, without Accrual Based Double Entry Accounting System & Audit process, the ULBs would not have been eligible for Performance Based Grants & Reform amount.

Key dates

Dates	Significance/Achievement
2015-16 to 2017-2018	Huge saving of revenue during the compliance process of internal audit objectives, approximately Rs. 95 crore.
2015-16 to 2017-2018	Due to timely statutory compliances, ULBs have experienced saving of fines.
2015-16 to 2017-2018	Introduction & implementation of ranking mechanism for assessing the work of ULBs through successful compliance of internal audit leading towards competitive environment to achieve self-sustainability.
2015-16 to 2017-2018	Database creation with the help of audit for information related to Central & State Government reforms.
2015-16 to 2017-2018	Overcomes irregularities in compliance to revenue process in ULBs.

Main focus

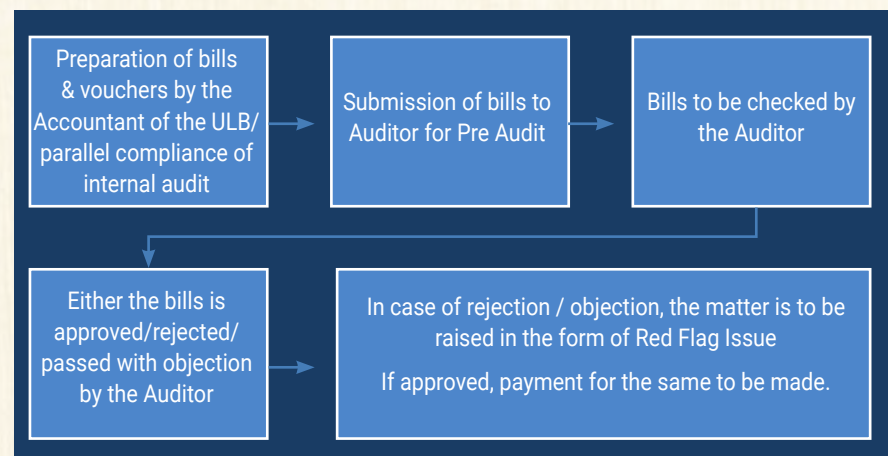
- Leading towards the self-sustainability by sustainable and optimum end use of grants of ULBs, budgetary control on the expenditures, control on diversion of fund in urban local bodies and check & control mechanism for evaluation of expenses and due reversal of expenditures.
- Detection and rectification of irregularities in revenue process compliance in ULBs for ensuring regular file processing according to CAG compliance, statutory compliance, i.e., TDS, PF, CT on timely basis, proper store accounting and physical verification of materials and reporting non-compliance to higher authorities in order to mitigate such error in future.
- Systemized control on payment process in Urban Local Bodies through cross checking of proper documentation in each payment file of ULBs, with all requisite compliances, review of the running bills of all construction activities as per tender process and sanctioned amounts.
- Appropriate implementation of Municipal Corporation Act 1956, Municipality Act 1961, Procurement rules, capacity building of ULBs for compliance of pre-defined rules and regulations and ensure transparency in urban governance, and introduction and implementation of ranking mechanism for assessing the work of ULBs.

Mobilization of resources

Total budget for the project was Rs. 13.95 crore, which was spent in three financial years. Allocation for each financial year was Rs 4.5, 4.5 and 4.95 crores for the FY 2015-16, 2016-17 and 2017-18 respectively. Entire fund had been sanctioned by State Urban Development Agency, Chhattisgarh. Regarding technical manpower, five CA firms were selected to mobilize the audit team and execute the services.

Process

To implement the willingness of administration and government, the authority had developed a model for pre-audit and internal audit. Subsequently, the audit team was authorized to be an integral part of ULBs and had been provided with the requisite mandate from administration, which led to adaptability of the audit. For the project, all the 168 ULBs were divided into 5 clusters namely Raipur, Bilaspur, Ambikapur, Bastar and Durg for successful implementation of the required services. Through tendering process, 5 CA firms were selected to mobilize the audit team and execute the services, which consisted of approximately 50 CAs and 100 support staff. In all 168 ULBs, Pre/Internal Audit has been implemented from November 2015.



Process

Results achieved

- In Raipur cluster, approximately Rs. 16.40 Cr. Fixed Deposit Receipt (FDR) along with the balance were identified and credited back into the bank accounts of ULBs which were not appearing in the record of the ULBs.
- Compliance of work has been started through effective check on payment against budget allocation of work and without Pre-audit, no payment is credited to any contractor, employee etc.
- Areas for self-sustainability have been evolved by the ULBs through increasing revenue sources with audit initiatives and advice, reduction in unnecessary expenses

and high yield of interest through fund management of unused money in ULBs. Cost saving in expenses is found in the range of Rs 1-20 crore per ULB, depending on the size and population of the ULB. There is saving of around Rs. 120-150 crore directly & indirectly by implementing and following the audit procedures. Only in Raipur cluster (34 ULBs), audit team had saved near about Rs. 95 crore through proper governance, capacity building of employees, monetary regularization, documentation and database regularization.

- Through audit parameter, ranking of ULBs are obtained for identifying the ULB's strengths and weaknesses.
- Had secured 4th, 3rd and 1st ranks, received incentive of Rs. 13 crore, Rs.25 crore. and Rs. 14 crore respectively, by compliance of AMRUT city reforms from Central Government in last 3 years.

Sustainability

Regarding financial sustainability, surplus cost recovery has been done via implementing this process. Since, there is no further cost to be incurred in future for the project, it can be stated that the project is financially sustainable. During the first 2 years of implementing this initiative, the State Government could save more than Rs. 100 crore with a meager investment of Rs.9 crore. For institutional sustainability, it aids in decision making of the Government by finding irregularities and non-compliance, thus helps in assigning clear roles and duties to various stakeholders.

Transferability

It can be replicated all over the nation from local to national level in different departments and organizations. Government of Bihar adopted similar internal audit process based on the same pattern of implementation done by government of Chhattisgarh.

Lesson learned

Regarding learning from the project, it is to mention that the political and administrative wills are strongly required to implement internal audit work. Regular monitoring and review committee is a must and for this, auditor/PMC should be hired. Online audit is recommended for better implementation and record keeping. In addition to this two level audit both pre-work order and post work order is recommended to avoid financial issues.

State Urban Development Agency, Chhattisgarh

State Urban Development Agency (SUDA) is a State level nodal agency of Government of Chhattisgarh for various central and state sponsored schemes with mandate of sustainable and planned growth of cities and towns with adequate infrastructure, amenities and services provided to the citizens through the Urban Local Bodies (ULBs). SUDA is involved in ensuring proficient management and delivery of civic services like provision of affordable housing, safe drinking water, sanitation including solid waste management, storm water drainage, sewerage, roads, public transport and creation of livelihood opportunities by accelerating economic growth of cities/towns and building capacity of all the stake holders of urban development sector.

ACCRUAL BASED DOUBLE ENTRY ACCOUNTING SYSTEM IN 168 ULBs of Chattisgarh by State Urban Development Agency, Chhattisgarh

Migration to Accrual Based Double Entry System of Accounting from Single Entry Cash Based System at all 168 ULBs of Chhattisgarh has been done in two phases to achieve self-sustainability in financial statements. Identification and valuation of assets and liabilities by chartered firms for placing them in balance sheet, updating records and registers, surveys, cross checking with source document and, third party certificate and physical verification of assets were carried out. Capacity building of staff of ULBs has been done through detailed handholding and prolonged training by organizing workshops and training of accounting staff of ULBs on periodic basis. Fixed Asset Register has been initiated and balance sheets were prepared. Income and Expenditure accounts helped in assessing profitability of the ULB concerned. Many unidentified transactions were cleared, non-operative accounts for long time were identified, and identification of assets has opened new ways for revenue mobilization.

Introduction

The Urban Local Bodies (ULBs) in Chhattisgarh were maintaining their accounts under single entry cash based system, which was an incomplete accounting system, causing many maladies that plagued the ULBs. Hence a shift from manual, Single Entry System of maintaining accounts to Accrual Based Double Entry System of Accounting in a computerized environment has become important to ULBs to achieve self-sustainability in financial statements to determine the financial position and ascertain Profit & Loss of ULBs. With this aim, **Accrual Based Double Entry System of Accounting in computerized environment has been formulated in all the 168 ULBs** of Chhattisgarh State which includes 13 Municipal Corporations, 44 Nagar Palika Parishads, 111 Nagar Panchayats, with substantiated financial statement up to 31 March 2018 by State Urban Development Agency, Chhattisgarh.

Background

After the 74th amendment to the Constitution of India, the ULBs of Chhattisgarh were not able to develop infrastructure on account of lack of funds. With launch of schemes like Jawaharlal Nehru National Urban Renewal Mission (JnNURM), Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT), the ULBs had at their disposal, the financial resources to be able to effectively discharge their functions. The role of ULBs thus became important and with this, the need for better financial practices emerged, with budget allocation based on the feedback received from general public. This could be implemented only with a strong financial accounting and reporting system.

Accounts of Urban Local Bodies under single entry cash based system was an incomplete accounting system wherein the ULBs were not aware of what they own and what they owe, and also there was no financial report generated by the accounting system for fund management, resource mobilization and budgetary control. It also caused many maladies that plagued the ULBs like deficient financial reporting, un-reconciled banking accounts, inefficient budgeting, poor financial planning, and too many inoperative accounts, non accounting of interest received from banks, loss of time in recovering or extracting relevant data. There was no record of ownership of the assets. Some assets were owned by other departments of government but were in possession of ULBs for long time and vice versa and the assets were also never valued, bank balances were not reconciled. Huge number of bank accounts were maintained, among which many accounts were not operative. Records maintained by ULBs did not give sufficient base for assessing the solvency and profitability.

All these have created a situation for introduction of Accrual Based Double Entry System of Accounting in computerized environment. It has been accelerated with the recommendations of the 13th Finance Commission. Without Accrual Based Double Entry Accounting System the ULBs would not have been eligible for Performance Based Grants. Further, mandatory reform under JnNURM and UIDSSMT Projects for implementation of Double Entry Accrual Based accounting system in the Urban Local Bodies has also accelerated proposal of the project.

Key dates

Dates	Significance/Achievement
30 th June 2018	Preparation of financial statement under Accrual Based Double Entry System of Accounting for F.Y.2011-17
30 th November 2018	Preparation of financial statement under Accrual Based Double Entry System of Accounting for F.Y.2017-18

Main focus

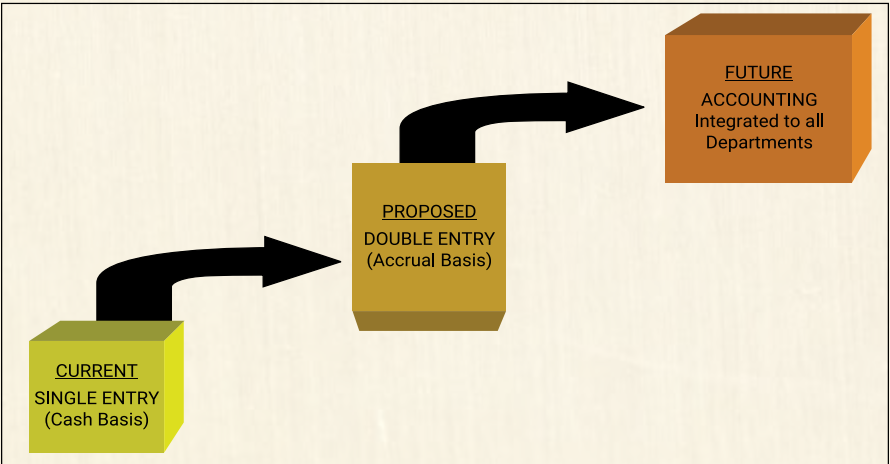
- Prevention of misappropriation and mismanagement of resources is the main focus of this initiative.
- Compliance with the recommendation of the 13th Finance commission and fulfillment of conditions of various schemes of Government of India.
- Exploring new ideas of revenue mobilization and to support this preparation of Opening Balance Sheet.
- Standardization of forms, formats and procedure.

Establishment of priorities

The first target of the initiative was to formulate a comprehensive document, which would provide guidelines and procedures for migration to Accrual Based Double Entry System of Accounting. It was successfully achieved when Chhattisgarh Municipal Accounting Manual (CGMAM) was developed and implemented in 2011. CGMAM standardized the formats and procedures for maintaining accounts on Accrual Based Double Entry System of Accounting. The next target was conversion of the accounts in Accrual Based Double Entry System of Accounting. As on 2019, 131 ULBs were covered in the first phase and 37 urban local bodies in second phase of the migration to Accrual Based Double Entry System of Accounting. 139 towns covered under second phase have their accounts converted to Accrual Based Double Entry System of Accounting till 2014-15. Work is in progress in 29 towns.

The last but not the least, the target was for training the existing staff of ULBs, so that the migration could be sustained. A new set of 121 accountants have been planned in the ULBs with core accounting background, out of which 40 accountants have already been placed after undergoing rigorous practical and theoretical trainings for nine days.

For exploring new ideas of revenue mobilization, preparation of Opening Balance Sheet (OBS) was essential. Only after preparation of OBS, the actual picture became clear about the land assets owned by the ULBs. It helped in exploring options for revenue mobilization.



Vision

Mobilization of resources

The initiative has been executed based on three groups of people. First group was the consultants engaged in execution of the migration work- both at field level and at

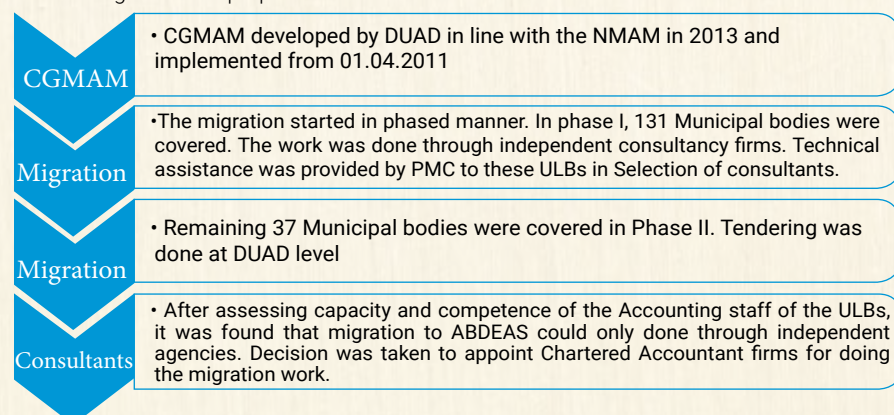
monitoring level, the second group was the accountants and other support staff at the ULBs and the third group identified was District Urban Development-Agency (DUAD). In the first phase, accountants for 131 locations, followed by the second set for 176 locations were mobilized for execution of this work. The teams from Directorate and the financial resources required for this project were from State Urban Development Agency (SUDA) constituted under Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT). The technical resources included the National Municipal Accounts Manual (NMAM), Chhattisgarh Municipal Municipal Accounts Manual (CGMAM), Tally and the guidance notes issued by the Institute of Chartered Accountants of India.

Process

During the planning phase, it was decided that approach to the whole process would be goal based. Focus areas were identified and entrusted to different sets of people based on their core competence and/or experience. Standardization of the forms, formats and procedure was achieved through development of CGMAM based on NMAM. CGMAM provides detailed procedures and formats for the books and registers to be maintained. It also provides the procedure for valuation of assets and preparation of Opening Balance Sheet (OBS). Detailed accounting codes are given to maintain uniformity.

For ensuring the quality and timelines in work, consultants were selected through e-tendering process from State level. Quality Based Low Cost Method was followed and committee at state level was formulated to review the work of consultants. Project Monitoring Consultants were formed at State Level for maintaining the quality of work and payments to consultants was made through e-transfer.

Identification and valuation of assets and liabilities were carried out by chartered firms for placing them in balance sheet, updating records and registers, survey, cross checking with source document and, third party certificate and physical verification of assets. Principle of rigour and simplicity was followed while drafting the balance sheet. Financial statement under Accrual Based Double Entry System of Accounting has been prepared for F.Y.2011-17 till 30 June 2018 and financial statement under Accrual Based Double Entry System of Accounting has been prepared for F.Y. 2017-18 till 30 November 2018.



Process flow

Capacity building of staff of ULBs has been done through detailed handholding and prolonged training, organizing workshops and training of accounting staff of ULBs on periodic basis. A set of 121 accountants have been approved to be placed at urban local bodies to handle the accounting under double entry accounting system, preparation of registers, preparation of BRS and all other activities to sustain migration to accrual basis.



Training of staff at ULBs

Results achieved

The goals of the initiative and the level of their achievement are massive regarding its effect. Implementation of common accounting procedures (NMAM/CGMAM) in all 168 urban local bodies of Chhattisgarh resulted in homogeneity in accounting procedure throughout the State. Maintenance of Fixed Assets Register has been initiated or updated, which provides details of all asset owned by ULB. Balance sheets were prepared, which give the financial position of ULBs. Income and Expenditure accounts were prepared, which help in assessing profitability of the ULB concerned. After preparation of Bank Reconciliation Statement (BRS), many unidentified transactions were cleared and corrections were made in the books. The accounts, which are not operative for years are identified, and process for closure of such accounts were initiated. Identification of assets opens new ways for revenue mobilization such as unused land could be used in various ways to generate revenue.



Updating records and registers

Transferability and Lesson learned

Departments handling schemes of Government of India and foreign funded projects require to follow Accrual Based Double Entry Accounting System as reporting requirements of foreign funded schemes can be fulfilled by adoption of this system only.

In case of replication of this initiative, selection of consultants should be made centrally. RFP should be designed in such a manner that reputed consultancy firms only can participate. Process of selection of consultants and payment should be transparent and technically competent persons should do the monitoring. Regarding learning from this exercise, it is to say that success of client and consultants relationship depends on factors that include proper monitoring of works, sincere efforts by the consultant, transparency and timely payments.

Cash vs accrual basis of accounting are two methods of recording transactions for a business. Under the cash method of accounting basis, transactions are recorded when cash is received or paid, under the accrual basis revenue, earnings and expenses are recorded when incurred. The accrual method is the preferred method as it complies with the matching principle in accordance with generally accepted accounting standards, which ensures that expenses are matched revenues.

The double-entry system of accounting or bookkeeping means that for every business transaction, amounts must be recorded in a minimum of two accounts. The double-entry system also requires that for all transactions, the amounts entered as debits must be equal to the amounts entered as credits.

74th Amendment Act, 1992 has introduced a new Part IXA in the Constitution, which deals with municipalities in an article 243 P to 243 ZG, which came into force on 1st June 1993. It has given constitutional status to the municipalities and brought them under the justifiable part of the Constitution. As per Article 243 W, all municipalities would be empowered with such powers and responsibilities as may be necessary to enable them to function as effective institutions of self government.

AWARD PHOTOGRAPH



Pre-Audit/Internal Audit in 168 ULB's & Accrual Based Double Entry Accounting System in 168 ULB's
by State Urban Development Agency Chattisgarh



URBAN GOVERNANCE

YEAR 2017-18

URBAN GOVERNANCE THROUGH TECHNOLOGY ENABLED REFORMS in Grievance Redressal by Navi Mumbai Municipal Corporation

With an objective of providing simple, faceless and transparent services to all its stakeholders through multiple service delivery channels such as web portal, mobile and citizen facilitation centers, Navi Mumbai Municipal Corporation (NMMC) embarked on an innovation led journey to **improve citizen service delivery by introducing robotics** driven unique online grievance mechanism, which not only helped citizens in filing their complaints, but also helped the Corporation to incorporate various policy decisions based on the feedback and nature of complaints submitted by the citizens. More than 10,000 complaints have been received till the month of February 2018, out of which 98.84% have been resolved with an average resolution time of 5.85 days only. This initiative has transformed the way in which the Corporation is working, which has enabled them to improve service delivery to citizens and to meet ever increasing demand for greater efficiency, transparency, effectiveness and accountability.

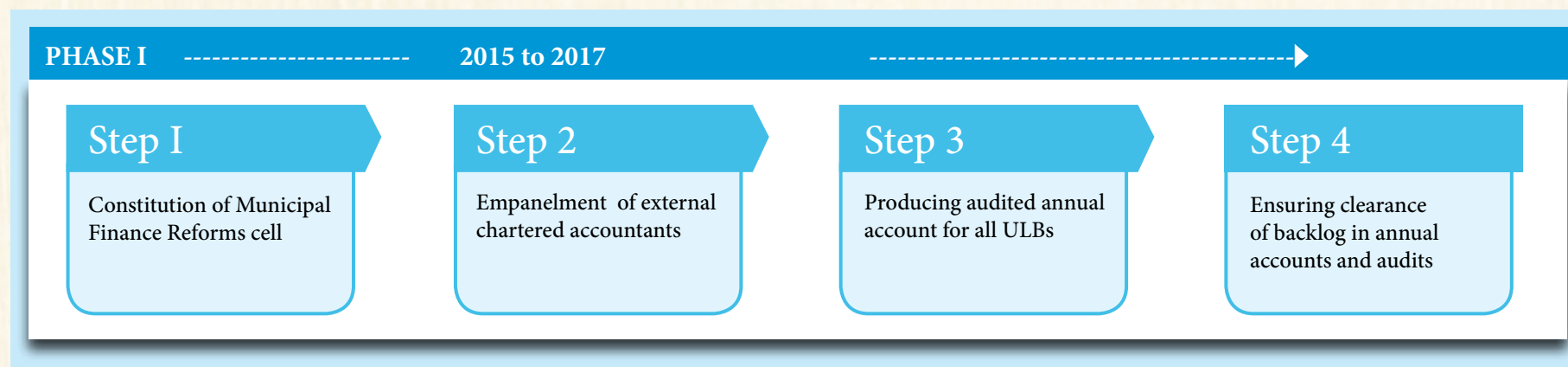
‘etc’ EDUCATION, TRAINING & SERVICES CENTRE FOR PERSONS WITH DISABILITIES by Navi Mumbai Municipal Corporation

‘etc’ (Education, Training & Services Centre for persons with disabilities) is an initiative by Navi Mumbai Municipal Corporation (NMMC). It is a one stop resource centre which provides **educational and rehabilitative facilities to Divyaang Children and adults** from Navi Mumbai Municipal Corporation area. The centre serves the special children with education, training and other allied services as well as the adult Divyaanjan by providing them with required assistive aids, economical support and giving benefits through various innovation schemes designed for People with Disabilities (PWDs) by the project ‘etc’. The centre serves the special children as well as the adult persons with disabilities (CWDs/PWDs) by providing them with required assistive aids, economical support and giving benefits through various schemes designed for PWDs. The awareness programmes conducted by etc. Centre help CWDs to know their rights and empower them to live life with dignity, which is the vision of ‘etc’. Students gain special education, learn skills to develop independence, develop socialization skills, and cognitive skills. Vocational training is also being provided to widen their employment opportunities. Along with the vocational training etc. centre started various vocational courses as well as placement of candidates after finishing the course. The environment at the centre is disabled friendly.

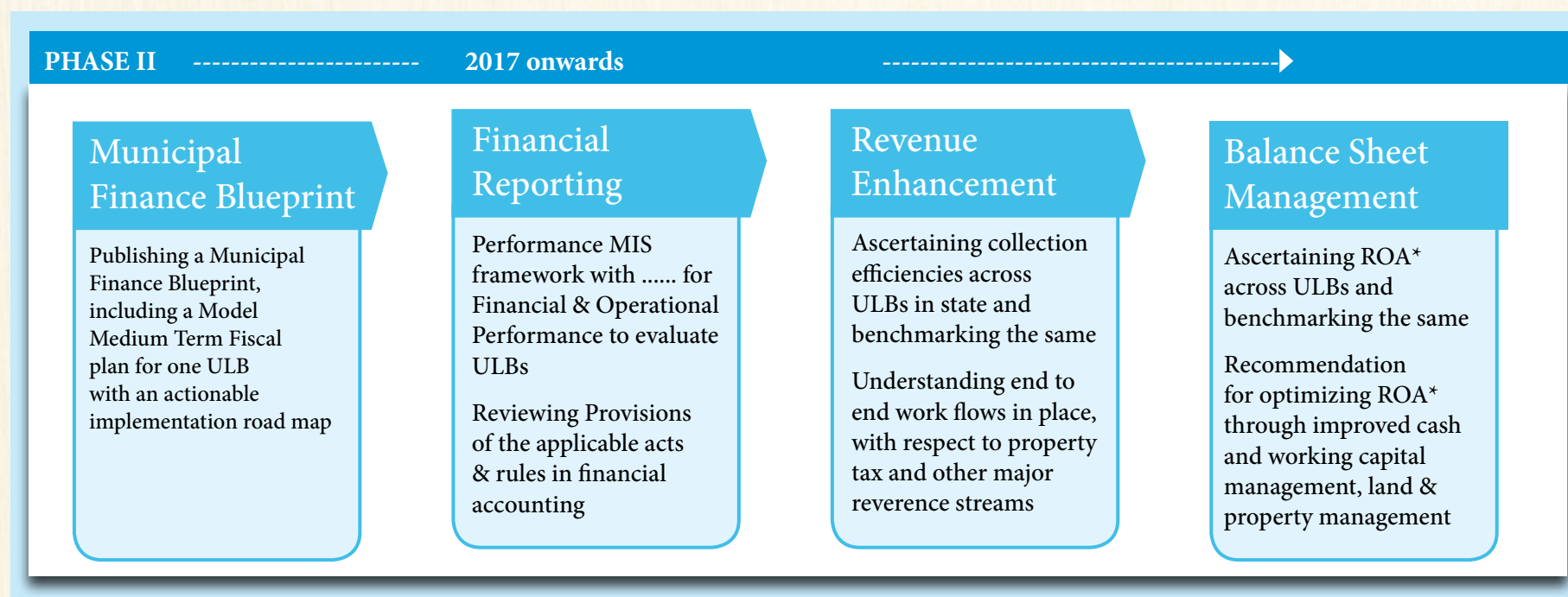
CREATING A ROADMAP FOR FINANCIAL SUSTAINABILITY OF ULBS IN RAJASTHAN by Directorate of Local Bodies, Rajasthan

The Government of Rajasthan in partnership with Janaagraha Centre for Citizenship and Democracy **initiated Accounting and Audit reforms in 188 Urban Local Bodies (ULBs)** in May 2015. Phase – I of engagement commenced with the signing of an MOU between Directorate of Local Bodies, Government of Rajasthan and Janaagraha for constitution of Municipal Finance Reforms Cell to facilitate preparation of audited annual accounts for all ULBs. Phase – II of the engagement commenced in November 2017 for development of a Municipal Finance Blueprint for the state. ULBs in Rajasthan achieved a major milestone in migrating from single entry accounting to double entry accounting, producing audited financial statements through empanelled Chartered Accountants (CAs) and took the first step towards financial sustainability. Through a process of empanelment, all 188 ULBs in Rajasthan have appointed CAs, and in less than a year, more than 500 audited annual accounts have been produced for the first time in ULBs of Rajasthan. Phase - II reforms would undertake transformative reforms for financial self-sufficiency and financial accountability of ULBs.

Financial Sustainability by Directorate of Local Bodies, Rajasthan



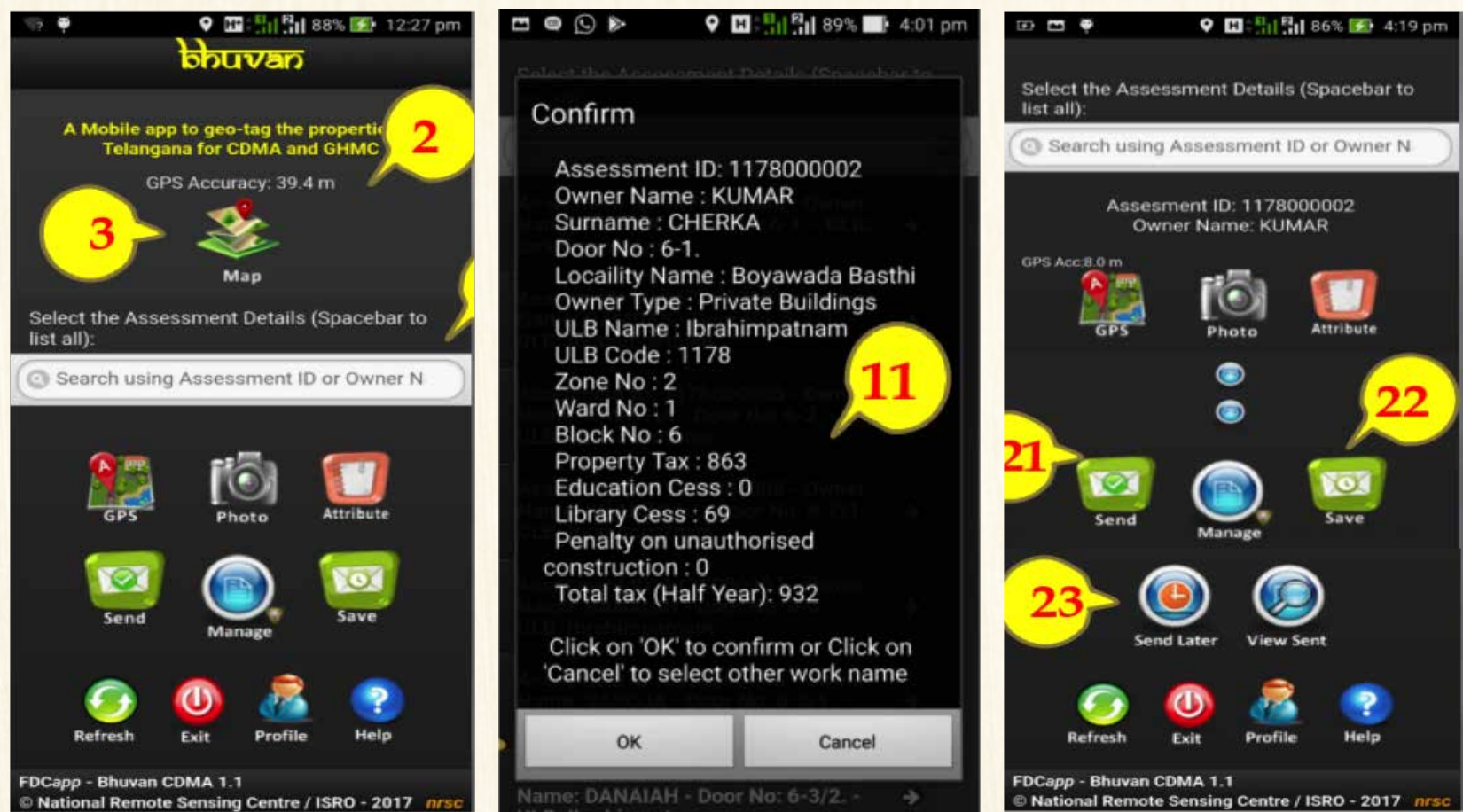
Phase wise process followed- phase I



Phase wise process followed- phase II

PROPERTY MAPPING IN URBAN LOCAL BODIES by Municipal Administration Department, Govt. of Telangana

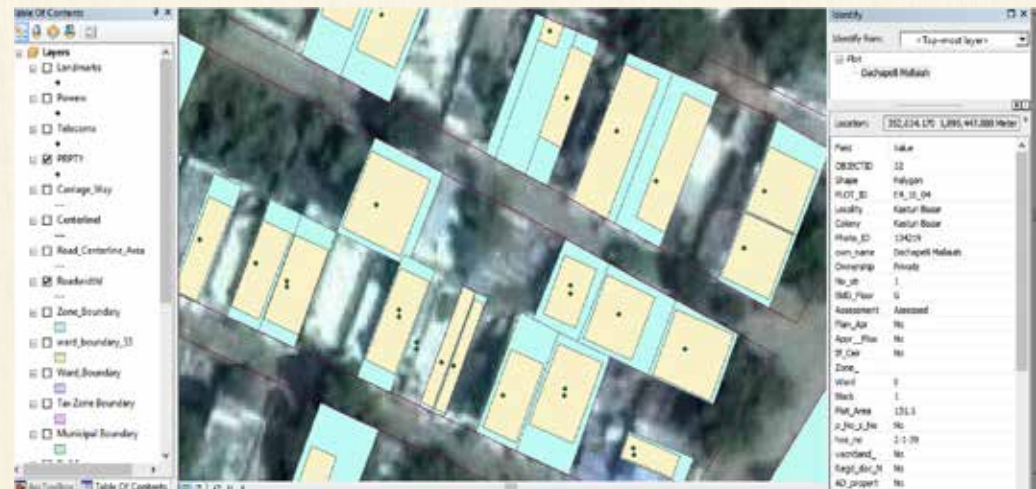
The Commissioner & Directorate of Municipal Administration (C&DMA), Government of Telangana has embarked on a task **to map all the properties in the urban areas along with the vacant plots, government properties and geotag them as part of Ease of Doing business**. The main objective is to integrate the property information with Geo-spatial data and put it in the public domain for easy access of property information. The Commissioner & Director Municipal Administration, 72 Urban Local Bodies and Indian Space Research Organization's National Remote Sensing Centre (NRSC) are the participatory agencies in the initiative.



Property mapping process in Bhuvan app

GIS BASED REVENUE IMPROVEMENT IN URBAN LOCAL BODIES by Municipal Administration Department, Govt. of Telangana

Property Tax is one of the major sources of income for an Urban Local Body. Due to improper levy, the ULBs are generally not in a position to mitigate to meet the mandatory provisions. As per the norms, the ULBs are supposed to revise the tax every five years. To increase the revenue of the ULB and make it self-sufficient, it is important to find out un-assessed and under assessed properties, so that the resources are charged fairly. The Commissioner & Directorate of Municipal Administration (C&DMA), Government of Telangana has undertaken the project of GIS based revenue improvement in ULBs to achieve the revenue improvement by improving the property tax coverage.



Property mapping in GIS, Telangana

YEAR 2016-17

INITIATIVES IN VOLUNTARY LAND POOLING SCHEME for Development of Amaravati City by Andhra Pradesh Capital Region Development Authority

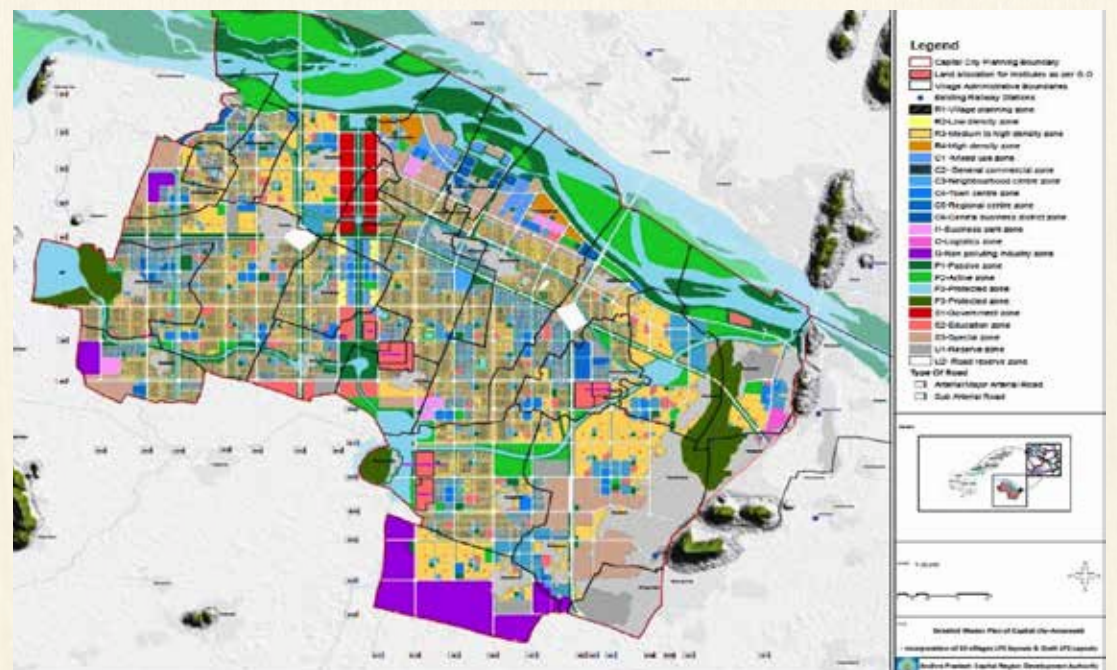
Along the banks of the river Krishna, Andhra Pradesh's **New Capital City - Amaravati** was to be created, spreading over an area of 217.23 sq.km, covering 29 villages that was inhabited by almost 1,20,000 people of Guntur district. The major challenge in this NEW CITY forming process was regarding availability of land. The core of Amaravati was planned on 33,000 acres of land, owned by individual farmers (both dry and fertile lands) stretching from between Vijayawada to Thullur. 'The Right To Fair Compensation and Transparency In Land Acquisition, Rehabilitation and Resettlement Act, 2013' mandates certain safeguard measures to be followed including a 'Social Impact Assessment' by an expert committee and a detailed plan for rehabilitating the original land owners, which generally makes the land procuring process a time consuming task, also opening room for variety of contentions.

Hence, the Government of Andhra Pradesh, through Andhra Pradesh Capital Region Development Authority (APCRDA), **adopted the 'Land Pooling Scheme' (LPS) as the best approach to address this challenge.** The focus of the scheme was voluntary land pooling from land owners/farmers with least displacement and minimal legal hurdles, also providing for compensation by way of allotment of developed residential and commercial plots out of lands thus pooled, to the original land owners along with an annuity financial commitment for 10 years, and waiver of agricultural loans. The LPS implementation involved conducting socio-economic survey, issuing notification, receiving consent of farmers, finalizing compensation package, confirming title and execution of agreement for conferring of ownership rights, finalization of City Master Plan, layout finalization and allotment of plots, issuance of Ownership certificate and commencing the infrastructural development. Welfare measures including social benefits, skill development, free health, free education, and one-time loan waiver to the participants of the scheme as well as all other eligible residents of the Capital City area were part of the rehabilitation package.

As a result of such parallel actions, within 60 days, over 25,000 willing farmers voluntarily contributed land admeasuring 33,494 acres. 42,095 residential plots and 28,637 commercial plots (11,602.80 acres) were handed over to the farmers along-with various payments to the tune of Rs. 573 crore. The initiative also made significant impact on the living conditions, as the communities rehabilitated, could become financially sound with better marketability options, due to increase in the land prices, waiver of agricultural loans and improved credit facilities.



Registration process for land pooling



Detailed Master Plan of Amravati City



Social development initiatives- Health and skill development



Consultation at various stages of Land Pooling Scheme (LPS)

YEAR 2014-15

GEOMP-IMPLEMENTATION OF GIS BASED PROPERTY TAX REFORM in Urban Local Bodies of Madhya Pradesh by Urban Development & Environment Department, MP

With the aim to provide a spatial dimension to the tax records and also aid in the improvement of Property Tax coverage through comprehensive property identification and to aid in **Spatial Planning of Infrastructure projects for Transportation, Water Supply, Sewerage etc.**, 'GeoMP' has been initiated by the Urban Development & Environment Department, Government of Madhya Pradesh for all ULBs in Madhya Pradesh. Further, to achieve honorable Prime Minister's vision of 'Housing for All' & 'Slum Free Cities', socio-economic and poverty data of the slums were collected to facilitate identification of poor households in existing/new identified slums. Inclusive approach was adopted and all the ULBs of the state were included for implementation of the project in a phased manner.

It commenced with the appointment of the Consultant in a transparent manner, for preparation of GIS base maps and conducting multi-purpose household survey through e-tendering process. Cost effective mechanism was adopted for development of GeoMP, which was developed in-house as well as in the map server - Open Source platform for publishing the spatial data. Interactive GIS maps have been utilized in the process. The main components of GeoMP were Intranet Application and Web-Based GIS. Next step was filing of SAF/Grievance Redressal where GeoMP has been used as a platform for filing of SAF as well as aiding in grievance redressal. Further, preparation of demand register, generation of bills & collection of property tax have been done. Approximately, Rs. 1,00,000/- has been incurred by each participating ULB for posting of GeoMP on a shared server and doing data entry.

As a result of the initiative, the properties covered under tax net have increased approximately

by 2-3 folds, subsequent to the implementation of GeoMP. It also laid the foundation for standardizing the Property Tax Assessment Process across the participating ULBs. Further it has resulted in Improvement in Collection efficiency by 40-50%. All this added to the accountability in complete Property Tax Collection System & daily monitoring of collection in spatial context. Further, transparency & error-free collection of Property Tax has increased the confidence of citizens about the officials of ULBs.



Household survey being conducted

YEAR 2013-14

VIRTUAL CIVIC CENTRE - Anywhere Anytime Civic Centre by Surat Municipal Corporation

City Civic Centers [elsewhere known as Citizen Service Center (CSC) or Citizen Facilitation Center (CFC)] had been established by Surat Municipal Corporation (SMC) for rendering citizen centric services to the citizens in the year 2003 with a view to improve service delivery and bring in efficiency and transparency in municipal operations. Despite its success, it faced difficulty in meeting public expectations.

To overcome geographical, demographical and time barriers attached with physical CSC/ CFC, a web based portal Virtual Civic Centre has been planned which was made accessible through SMC's website and acted as an add-on service delivery channel. Services covered included payment of property tax / advance tax, payment of professional tax for enrollment certificates & registration certificates, payment of water meter bills, renewal of shops &

establishment registration certificates, issuance of birth & death certificate and download of forms at free of cost. **The web based portal has been created, wherein all the transactions related activities can be done** directly by the citizen. To enable collection of taxes and charges, the payment gateway has been securely integrated with the Corporation's website and database. Other aspects, such as user-friendly user interface, local language support, user intimation, system security and sanctity were also of prime importance. Virtual Civic Center completely removed manual interventions of SMC employees for service delivery. By implementation of this project, SMC has been benefitted in multiple ways by reducing the manpower cost, operational cost, increasing transparency etc. As on 2014, over 44,000 transactions had taken place since its inception in April 2012.

EFFORTS by Municipal Reforms Cell, Directorate of Municipal Administration, Karnataka

PUBLIC GRIEVANCE & REDRESSAL SYSTEM

The Public Grievance & Redressal (PGR) module is a **Citizen friendly complaint registration and tracking system adopted by all the 213 Urban Local Bodies (ULBs) of Karnataka that functions over internet phone and paper form.** Through the Public Grievance and Redressal System, citizens can register their grievances and track the progress of their redressal in a structured and efficient manner. Upon registration, the computer system generates a 'Complaint tracking number' using which the status and progress of the complaint can be checked by the citizen over internet. The uniqueness of PGR system has been that it has introduced transparency and accountability from Municipal Administration. This system includes advanced features like auto routing of complaints to appropriate redressal officer and if the complaints are not redressed within the stipulated time, they automatically get escalated to the higher level officer. ULB has appointed Non-Government Organization (NGO) for fair handling of PGR cell with nominal monthly fee. It helps in easy dialogue between citizen and redressal officer and it has the facility to forward the complaints to appropriate person.

There are 148 types of complaints pertaining to different sections, which can be registered through PGR system and status tracked. Various types of reports are generated and are available on the system to show the performance of the system. As a result, significant time-saving has been done for the public for availing different services offered by the ULB. For example, the processing time for various issues has been reduced from several days to less than 1 day. Further, involvement of NGO has helped illiterate and other needy people to complete their paper work. Complete accountability has been maintained as papers are delivered to people within the committed time. Daily summary and auto escalation of pending cases to the higher level officers have boosted the performance of the administrative staff. It has become useful tool to understand what kind of problems occur at which part of the state and at which time of the year. The data of each of the ULBs thus generated, is shared to all the government departments for further value addition.



Public Grievance & Redressal Cell

FUND BASED ACCOUNTING SYSTEM

Fund Based Accounting System, is a scientific tool, which can be put to multiple uses. It offers best finance management as core function with robust MIS layers in each of the departments of ULB, facilitates achievement of right balance between resources and development demands and ensures efficiency in application of scarce resources apart from refining budgeting process. It is a perfect back end system for any of the frontend e-governance initiatives and also a tool of performance evaluation at individual official/officer level, at each department level and at institutional level. It is an urban tool to ensure accurate, reliable and timely information about all the activities of ULB. The Fund Based Double Entry Accrual Accounting System enables accuracy of records, preparation of financial statements, accounting of receivables and payables, segregation between capital and revenue items, which will depict a better financial picture of ULB and enables to endeavor better fund management, resource mobilization and budgetary control. Under the project, assets and liabilities of 213 ULBs have been brought into accounts and over Rs.4033 crores

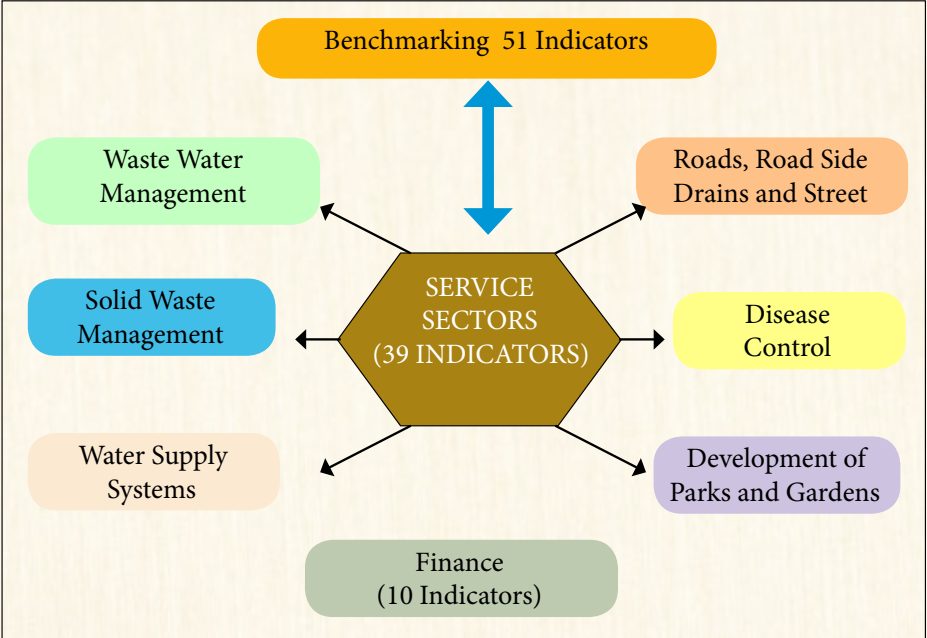
assets have been captured. Standard chart of accounts are being used for accounting as well as for budget, which is uniform for all 213 ULBs, further, cost and performance indicators for evaluation of ULB's services and financials has been made part & parcel of financial statements. Two rounds of public participation in preparation of budget have been made mandatory including disclosure of accounting and budgeting information financial position to public through ULB website and local newspapers. As a result, fixed assets worth around Rs. 4033 core that was otherwise unnoticed, have been physically identified, enumerated and brought into records. The new accounting rules have made it mandatory to prepare fund wise accounting reports which would assist in determining the extent of recovery of cost of providing services to citizens and ring fence the funds allocated for each purpose. The web-enabled software has allowed the government in accessing database of all the ULBs through centralized server.

SERVICE LEVEL BENCH MARKING - TULANA

With rapid economic growth, the municipalities have been vested with certain obligatory functions and ULBs are under immense pressure and strain to meet the

raising levels of demands and aspirations of their citizens, resulting in undesirably low levels of service delivery and insufficient utilization of available resources. Directorate

of Municipal Administration (DMA), Karnataka, took an initiative to build a common platform which could ease out tracking and management aspects of various sectors for improvised governance in ULBs. 'Tulana' – Service Level Benchmarking provides the mechanisms by which the ULB knows if it is achieving its objectives as the online application transforms data into information useful for decision making. Under this project, service sectors viz., water supply system, sewerage and sanitation, solid waste management, roads, road side drains and street lights, disease control, developments of parks and gardens and finance sector have been considered, which comprises of 49 Performance Indicators. One of the major focus areas for the project right from the start was to create a scalable platform that could be rolled out across the state, covering all 213 ULBs. A Service Level Benchmarking Website (www.karbenchmarking.gov.in) has also been developed which acts as a gateway for accessing the application. As a result of the initiative, from the government and socio-technical perspective, it has improved information base, defined monitoring and provided greater transparency. It has rationalize decision making through help in policy decision, comparison of the ULBs, replication of best practices, prioritization of activities, the activity, streamlining the flow of data, attracting financial investment and performance improvement plans. From the perspective of citizens, this tool helps citizens to involve in the local body decision making and thus helps in effective community participation.



Service level benchmarking focus areas

GIS BASED PROPERTY TAX INFORMATION SYSTEMS - AASTHI

AASTHI (GIS based property tax information system) has been introduced **for effective collection of property tax, to bring more transparency, accountability in the entire process of property tax collections in the state of Karnataka.** This aims to automate taxation process and integrate with other functionaries of the ULB to keep the updated data and information of every property with unique standard across all ULBs of the state. It aims to do it through a GIS based Property Tax Information System, which would improve the record keeping system of properties, increase the tax compliance rates and also enable ULB officials to make informed decisions. In the beginning of fiscal year 2002-03, the government of Karnataka has implemented a set of far-reaching reforms to its system for collection of property tax in urban areas. The method of assessing property value for

the purposes of calculating property tax due was changed from one based on estimated rental value to one based on the total capital value of land plus building. This system has brought transparency in the process of property tax collection. The system has increased the responsibility and accountability on the part of Bill Collectors and Revenue Officials. The software helps to monitor and control the entire property tax collection system without depending on the information being provided by the lower staff manually. The performance of different ULBs is being monitored by using the central, database, which brings a sense of fear and resultant responsibility in the minds of the Managers of ULBs. Last but not least, the system has simplified the collection of data enabling periodical of state level review of property tax collection.

YEAR 2012-13

MANAGEMENT INFORMATION SYSTEM for Planning and Implementation of Rajiv Awas Yojana in the State of Kerala by Kudumbashree, Kerala State Poverty Eradication Mission

The version of MIS made available by the central government needed upgradation and additions along with customisation of the functions provided that are unique to a State and a Region. Hence, it became imperative for Kerala to design and develop a **Management Information System that leveraged the latest technologies while meeting**

the requirements of the State. Thus, the MIS developed for Kerala had two significant parts:

- The Rajiv Awas Yojana (RAY) Progress Monitoring module
- Socio-Economic Survey module.

The broad scope of the MIS was derived through in-house consultations and deliberations. The outputs were translated to functional blocks. Each block was then subjected to detailed discussions, surveying, prototyping and verification, using stakeholder samples. The implementation of the modules was driven based on ground realities and software development principles.

The limitations observed in original version of the MIS, coupled with inputs from stakeholders samples formed the basis of defining the end objectives of the MIS – a development platform that can be easily mastered; a database design that supports high speed data capture and fast reporting; a functionality based modular design that is attuned to easy customization and a simple intuitive user interface that will result in minimum start-up time for a novice user. The development strategy was driven by progress of RAY activities by various teams on the ground and the development team had to follow the Scrum process.

The final operational management information system provided user access at multiple levels – super user, state-level user, city level user. At each level, access is further grouped into view-only and updateable. The MIS supported detailed activity tracking at cluster level. It supports timeline reports and activity reports. Three different survey formats – NBO, Kudumbashree and NBO+Kudumbashree were supported, with provision for quality checking and threshold based acceptance criteria. The MIS had to 'Lock' data once quality checking was done preventing tampering. Many reports were generated online, including single and two-variable analysis of the socio-economic survey data.



Meetings conducted to draw functional outlines

YEAR 2011-12

IMPLEMENTATION OF MANAGEMENT INFORMATION SYSTEM by Jabalpur Municipal Corporation

Jabalpur Municipal Corporation (JMC) is one of the pioneers in harnessing the power of Information Technology in Madhya Pradesh. **Information Technology Enabled Systems** have been put in place by JMC when the number of ward to be served went up from 30 to 70 wards. Standardizing the processes involved in the municipal services to obtain timely and accurate information was done, thereby benefiting 14 lakh citizens of the city. 1.69 lakh ledgers of property tax, 1.19 lakh ledgers of water tax and 2312 ledgers of shop rent have gone online. Tax information through Short Messaging Service (SMS), online facilities of Tax Calculator, bill generation, payment gateway for 40 banks, real time updating, etc. have been done through the project. Search of death & birth registration, online issuance of Death and Birth Certificates with signature has been included. Social Security Scheme

database of 24,189 beneficiaries was made online. Global Positioning System (GPS) has benefited management of 72 vehicles for last one and half years (as on 2012), aimed for efficiently managing the utility services. This saved Rs. 51.25 lakh in one year in fuel cost. GIS base map has been prepared having 8 layers, used in household survey for urban poor, tax management and development schemes. Online Booking of community halls, online payment and renewal of license, e-library and Project Monitoring System were the other initiatives under this project. As a result water tax collection has increased from Rs. 1 crore. to Rs 11.42 crore. The number of registered water connections has increased from 35,303 to 1,23,000. Property tax payers have increased from 1.45 lakh to 1.69 lakh.

URBAN RESEARCH CENTRE, THANE for better Urban Management and Administration by Thane Municipal Corporation

In order to provide city spatial information for urban planning and for decision making to promote modern Urban Infrastructure Management, Thane Municipal Corporation (TMC) took the initiative to start an **"Urban Research Centre"** in a new building located at the heart of the city. It is the first centre of its kind set up by an Urban Local Body in India. The centre's intent is to provide a base for research in the field of Urban Development and Capacity Building in all sectors of Development Administration. It shall act as a resource centre for policymakers, researchers, city planners, architects and shall help in more efficient city development. Citizen researcher programme, support programme for young researchers and short term researcher programmes are offered. The centre will help the learners in

making effective use of the educational and training schemes provided to developing focused themes into study plans, initiating intensive discussions and implementing the finalized programmes.

The centre will carry out network building with citizens, NGOs, business people and urban planning consultants who will work closely with the communities in Thane, Mumbai Metropolitan Region and India, as well as university affiliated researchers and opinion leaders. The practical studies and research will help in drawing out proposals for formulation of sound urban policies, to develop an integrated approach towards city development and to establish highly efficient city managers.

E-GOVERNANCE INITIATIVES FOR THANE CITY by Thane Municipal Corporation

Having responsibility of planning, development, operation and maintenance of services and utilities, Thane Municipal Corporation (TMC) envisages implementing **Enterprise Geographical Information System (GIS)** to enhance the services and establish better management control. E-tendering process has also been initiated to achieve automated tender process, to have global participation, security and transparency in the complete process.

The Online Building Plan Approval portal is a complete online web enabled platform with intention to bring in complete transparency through e-governance in the working of town planning department of TMC. Through the GIS Based Administration, 1:1000 scale mapping

of the entire city of Thane has been achieved by using High Resolution Satellite Imagery, which provides current ground realities. Decision making process has been enhanced due to location based information and day to day information all aspects of in all the departments of the Municipal Administration. Real time updating of spatial and non-spatial data has become possible through web based and mobile-based application interfaces. Inauguration of e-portal was done on 13.06.2011. By e-tendering procurement, TMC has saved Rs. 4.09 crore. Online Building Plan Approval System also protects project's buyers from buying unauthorized/unsanctioned houses; citizens can be a part of forum where they can share their views, complaints and suggestions with the department.

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