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NITI Aayog

DMEO

DEVELOPMENT MONITORING AND EVALUATION OFFICE

Best Practices Compendium

Urban Sector

Evaluation of Umbrella Centrally Sponsored Schemes

February 2021

Contents

A. Introduction

Background

In January 2020, NITI Aayog commissioned an evaluation of Centrally Sponsored Schemes (CSS) under the Urban Sector. A part of this evaluation was focused on identifying global and home-grown best practices, case studies, interventions etc. to strengthen the implementation of various schemes under the Urban Sector.

This document is a by-product of the evaluation and presents a compendium of best practices collected through primary and secondary sources and provides details on implementation mechanisms and the impact of such practices. The document is intended to facilitate knowledge sharing highlighting the innovative practices which have resulted in positive changes for all stakeholders in urban sector across the value chain, both in India and outside.

Sixty-one practices including fifteen global practices have been documented, covering areas like technology, innovation, gender mainstreaming, convergence etc. under different CSS. These practices have been included based on their key impact and contribution to the wider public policy context, by highlighting lessons learnt which may be useful for scale-up or cross-adoption.

It is highlighted that the practices included in this document are not exhaustive, and it is acknowledged that various high-impact interventions and activities are being undertaken across the country, based on global and local lessons, which may not have been included in this document.

This document is expected to be used by policymakers, scheme managers, and implementers for learning lessons from the proven successful implementation of interventions. The document aims to bring in one place the available resource of best practices and promulgate knowledge sharing.

Structure of the Compendium

The Compendium has been arranged scheme-wise in the following sequence:

- Smart Cities Mission
- Atal Mission for Rejuvenation and Urban Transformation
- Pradhan Mantri Awas Yojana (Urban)
- Swachh Bharat Mission (Urban)
- Deendayal Antyodaya Yojana - National Urban Livelihood Mission

Methodology

Relevant case studies conforming innovation, outcomes, sustainability and replicability have been shortlisted. They have evolved from extensive secondary as well as primary sources. Secondary sources referred for evidences were Mission documents, State level websites, resources from smartnet, newsletters, etc. Primary sources have predominantly been Key Informant Interviews (KIIs) conducted with various stakeholders.

Structure of Case Studies

For the case studies, the following aspects have been presented:

- Summary
- Objectives and rationale
- Key stakeholders
- Implementation strategy
- Resource utilisation
- Impact
- Key challenges and lessons learnt
- Replicability and sustainability
- Fact sheet

B. Smart Cities Mission

1. Multilevel car parking at Mangaluru

Summary:

Over the last few years, Mangaluru has witnessed dense development resulting in problems such as traffic congestion and lack of adequate parking facilities. To resolve this, a Multi-level Car Parking (MLCP) facility in Hampankatta is underway to reduce parking woes in this area. The MLCP facility is being developed at the vacant site of the old bus stand, which lies within the ABD area. Realizing the commercial potential of this location, this is being developed as an integrated MLCP cum commercial complex facility through PPP for development, operation and maintenance of the facility.

Objectives:

The main objective is to reduce the traffic congestion and parking woes in the area through a multi-level smart city parking facility. The vacant site of the old bus stand has been chosen to be utilised. The other objective was to create a civic infrastructure facility through PPP mode.

Key stakeholders:

- Mangaluru Smart City Limited (MSCL)
- Mangaluru City Corporation (MCC)
- Private shop owners as stakeholders onsite

Implementation strategy:

A proposal to construct MLCP was mooted after the city bus stand at Hampankatta was demolished two decades ago. Now, Mangaluru Smart City Limited has included the project under SCM. Presently the site serves as a municipal parking lot with a maximum capacity of about 110 ECS. During late evening, the site also serves as the informal originating point of inter-city private buses. The site is located at junction of KSR road and Balmatta road *(Smart Net, NIUA, 2017).*

Total vacant space belonging to MCC: 1.55 acres and area occupied by private buildings: 1.06 acres. The project has permissible FSI of 2.5, with potential to increase upto 4 (including premium FSI of 1 and TDR of 0.5) for commercial development based on the zonal regulations for Mangaluru. The project is being implemented at a cost of Rs 91 crore, under Public Private Partnership (PPP) mode on Design-Build-Finance-Operate-Transfer (DBFOT) format by MSCL and the authorities are planning to complete the project within three years. The project is expected to avoid traffic congestions on nearby roads, where most of the commercial buildings do not have proper parking facilities.

The basement floors and part of ground floor would have parking facility and the upper floors would have commercial complex. The MLCP facility would create the much-needed parking space within the CBD area and assist in decongesting the traffic along the main arterial roads. The facility would have parking capacity of 500 cars and 300 two-wheelers. Real time information system (indicating availability of parking slots) would be incorporated with parking facility and also in Mangalore-One mobile application.

Resource utilization:

The project is being executed at an estimated cost of Rs. 94 crores.

Revenue streams from the operations of the Multi-Level Car Parking:

- Parking charges
- Advertisement Rights

Revenue Stream from Commercial Complex:

- The developer would be able to generate revenues from the lease/ rentals from the commercial complex *(Mangaluru Smart City Lmited, 2020)*

Impact:

The project was started in 2018 and is estimated to be implemented by 2021. This multi-level car parking facility will have parking capacity of 500 cars and 300 two-wheelers, which is expected to ease prevailing

parking woes. A commercial complex will also be developed alongside to cater to the existing neighbourhood buildings.

Key challenges and lessons Learnt:

The buildings on the periphery of the site are quite old and many of these are in disrepair with deteriorating condition. The retail development found around the site is mostly informal high street retail mainly housing private bus operators' offices, assorted shops and eateries. The buildings do not have front set-back space on the roadside, which would have to be provided for in case of redevelopment or road widening. The streets are also narrow with heavy pedestrian and vehicular traffic.

Replicability and sustainability:

Along with private sector participation, cities can better plan and leverage their resources (land & money) to further create better civic infrastructure and services. Cities like Indore, Nagpur, Vadodara, Ujjain, Belagavi, etc. are similarly developing Multi-Level Car Parking facilities through PPP mode.

Fact Sheet:

Thematic area	Public Private Partnership, Urban Transport
First-year of the program	2018
Responsible Institution	Mangaluru Smart City Limited
Target audience	Two-wheeler & four-wheeler drivers
Coverage	Hampankatta, Mangaluru, Karnataka

2. Community & citizen engagement in Pune

Summary:

During the Smart City Proposal stage, Pune officials made serious efforts to involve citizens and communities on an unprecedented scale across the city, through various digital and non-digital mediums. Aiming to make it 'the Ideal Smart City' in India, they set out with the objective of sensitizing citizens about this initiative, considering it a monumental task. The Pune Smart City Development Corporation Ltd (PSCDCL) plans to address current challenges, including mobility, energy efficiency, increasing green cover, slum rehabilitation, bringing digital technology to residents, and empowering underprivileged youth.

Objectives and rationale:

- To create structure practices that enable meaningful participation by citizens
- To develop a smart city plan based on the aspirations of citizens

Key stakeholders:

- Pune Municipal Corporation (PMC)
- NGOs & Social Foundations
- Citizens

Implementation strategy:

Distinctive 5S approach towards citizen engagement was adopted:

- Speed: Ensuring the entire process from design to engagement to data analysis to solution development to syndication with citizens is completed in a 100-day timeline.
- Scale: Reach out to majority of citizens across all areas, across all socio-economic segments and demographics
- Structure: Proprietary 9-phase approach to citizen engagement Pan-city and Local-area development
- Solutioning: Focuses not only on identifying problems that need to be addressed, but also use crowdsourcing and narrow-cast approach to develop real and implementable solutions
- Social audit: Syndication with and acceptance of citizens part of core design

In line with the Smart Cities Mission guidelines, the Pune Smart City team structured the entire citizen engagement effort into nine phases - the first five phases were for the entire city while the last four were run for the area identified for the local area development initiative. The citizen engagement process was run tightly, with a strict deadline for each phase that was publicly announced. The output for each phase was shared back with the citizens with the help of local media within 2-3 days, making it a closed-loop process.

The Smart City Pune team, which consisted of multi-stakeholders such as Government Officials, Corporates, NGOs and social foundations, Consulting Firms, students from Schools and Colleges and local Media, drove a four-pronged effort before launching the citizen engagement Initiative, which consisted of

- Defining the stages of citizen engagement and objectives for each stage
- Defining different modes of citizen engagement
- Creating a partner eco-system to drive an effort of this scale
- Creating a 'war room' to monitor and track the entire effort.

Resource utilization:

A team of 400 members consisting of Pune Municipal Corporation (PMC) officials and multiple partners working made this initiative possible.

Impact:

A comprehensive citizen engagement process was run for local area selection, with **2.81 lakh inputs** for the area selection based on the criteria shared by the Pune Municipal Corporation. Citizen selection process,

along with the discussions with the urban planners and elected representatives formed the basis for very objective local area selection.

Offline Engagements include:

- Face-to-face: 7.5 lakh forms distributed to households across all 15 wards, out of which, 307,991 households filled the form – 1.5 lakh citizens signed-up as smart volunteers. Around 15,000 school students from different schools in the city have taken out a rally to spread the word about the Smart Pune Mission.
- Discussions: 100+ meetings with different groups from the Pune stakeholder grid
- Newspapers: 10 leading newspapers in the city covered the campaign through 20 articles over a period of 45 days
- Radio-channels: 40 messages broadcasted across 5 radio channels
- Others: Around 400 Ganesh Mandals had initiated to set up drop boxes for the devotees to submit their feedbacks.

The extensive citizen and community engagement efforts contributed to Pune Smart City Proposal bagging second place overall in Round 1 lighthouse cities of the Mission. Additionally, significant pull was created through media and online presence where citizens would give suggestions on the website *(Smart Pune, 2015).*

Key Challenges and Lessons Learnt:

Through these efforts a strong vision community has been created in Pune where citizens have the opportunity to voice their opinion and help implement solutions to civic issues.

Source: (Pune Municipal Corporation, 2015)

Replicability and Sustainability:

Many cities have scaled up extensive citizen engagement practices as demonstrated by Pune. Such initiatives should be administered even during the implementation stages of the Mission.

Fact Sheet:

Thematic area	Citizen Engagement
First-year of the program	2015
Responsible institution	Pune Municipal Corporation
Target audience	Residents of Pune
Coverage	Pan-city: Pune, Maharashtra

3. Timely completion of Indore's market renovation

Summary:

Indore's famous street food market '***56 Dukaan***' has been renovated under the Smart Cities Mission. The FSSAI (Food Safety and Standards Authority of India) certified street food hub spans around 200m and is patronized by locals and tourists alike. Earlier, haphazard parking and encroachment on walkways had been a major issue. This market has now been transformed into a smart street-food hub. It was first of its kind project in Madhya Pradesh to have a timer installed for the purpose of finishing off the work on time.

Objectives and rationale:

The market renovation project was intended to demonstrate improved public spaces within a set timeline.

Key stakeholders:

- Indore Smart City Development Limited (ISCDL)
- Shopkeepers at 56 Dukaan market

Implementation strategy:

The market had an ambitious implementation deadline of 56 days for completing the renovation work. A day count-down timer installed at site location displayed number of days remaining to the target deadline for the renovation project, first such kind in Madhya Pradesh. This measure motivated the implementation agency and the shopkeeper's association to work together to ensure the project is completed on time. The project costs Rs. 4 crore and was completed in under 53 days. Prominent features include:

- Shade awning and façade development for all shops,
- No vehicle zone,
- Seating arrangements,
- LED panels for advertisement,
- LED streetlights,
- Designer pavement space,
- Boulevard planting,
- CCTV surveillance,
- Water dispensers, etc.

The shopkeepers are required to pay nominal user charges to Indore Smart City Limited. The entire street has been transformed into a no-vehicle zone, with provision of additional mechanised parking spaces nearby. Open air theatre is also proposed in the area to provide entertainment for the visitors. Public events and gathering are also hosted in here.

Resource utilization:

The total project cost was around Rs. 4 crores. The entire development project was taken up by a private company. *Source: (Indore Talk, n.d.)*

Impact:

Since the intervention by Indore Smart City Limited, the patronage of the 'smart food street' has significantly increased and has subsequently led to greater economic activity. "The average daily footfall is reported to have risen significantly." ~ KII respondent (EY and Athena Primary Research: KIIs, 2020).

Key challenges and Lessons Learnt:

This market renovation project has successfully demonstrated that collaboration between stakeholders, civic leadership commitment and accountability towards the public can help deal with complex challenges and stiff deadlines.

Replicability and Sustainability:

There have been demands from Sarafa Bazaar, another well-known market of Indore, and Apollo Hospital street vendors market to intervene on similar basis. Other cities can replicate such innovative practices of having a countdown timer installed to instill confidence amongst stakeholders as well as to complete the project in committed time.


Fact Sheet:

Thematic area	Time efficiency in project implementation
First-year of the program	2019
Responsible institution	Indore Smart City Ltd
Target audience	Citizens of Indore
Coverage	Pan-city: Indore, Madhya Pradesh

4. Role of SLNA (KUIDFC)

Summary:

Karnataka Urban Infrastructure Development & Finance Corporation (KUIDFC), akin to many of its peers in India, has been set-up as a State Level Intermediary (Financial and Administrative) to support Municipal and Urban development programs. However, in due course, KUIDFC has enhanced its capabilities from being a pass-through vehicle for Govt. Program Funding to a more Resource mobilization and augmentation Institution.

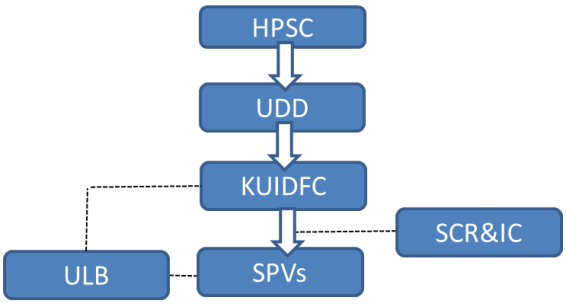
Highlights:

- Set up in 1993, notified as State Pooled Finance Entity (SPFE) and acts as Fund Manager for two Funds – UIDF and MCRF
- Leveraged GoI MegaCity Scheme and EAP funding to create substantial corpus in two Funds (~1200 Cr balance, 2018). Has set up KWSPFT and raised tax free bonds and now leveraging GoK program funds, UIDF, MCRF funds for projects.
- Broadly two categories of Funding models adopted – EAP (60:40) and Govt. Sponsored (50:50) viz. Grant, Loan proportions. While Grant component is passed on from GoI/ GoK the Loan component is securitized through SFC Devolutions to ULBs, for repayment.
- While KUIDFC Board deals with corporate matters, there are Empowered Committees (with delegated powers of cabinet) responsible for decisions on projects/programs.
- The total organization strength is ~350 with a mix of staff by deputation, contract, outsourcing and consultancy recruited as per KUIDFC HR Policy. These staff are spread across 8 locations in Karnataka, including HQ at Bengaluru

Implementation in Practice:

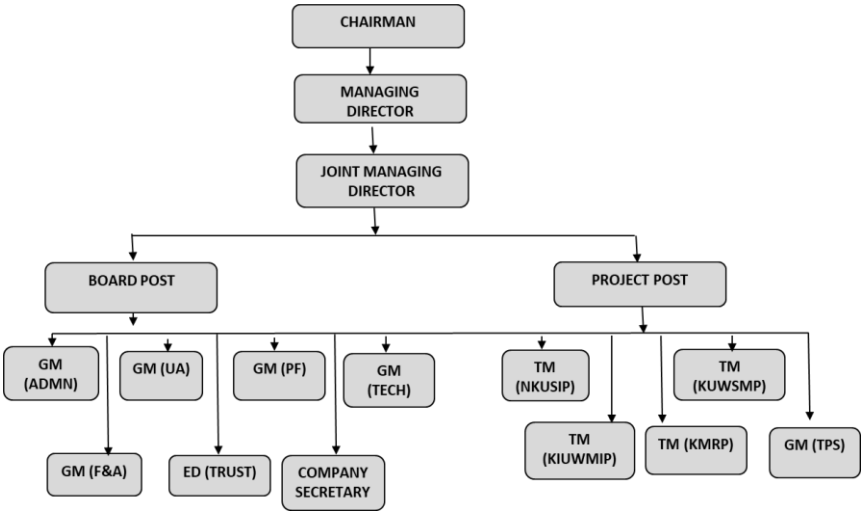
Role in Smart Cities Mission

- KUIDFC, as the SLNA for SCM in Karnataka, has been supporting 7 cities – Belagavi, Hubballi-Dharwad, Davangere, Shivamogga, Tumakuru, Mangaluru and Bengaluru
- KUIDFC has adopted a robust and effective governance, institutional support mechanism for implementation of Smart Cities Mission in Karnataka:
    - High Powered Steering Committee (HPSC) headed by the Chief Secretary having HoDs of various departments - accorded status of empowered committee
    - KUIDFC as the convening agency had the role to coordinate all the 7 cities – financial as well as administrative
    - Smart City Review and Implementation Committee chaired by the Minister (UD) with members from People Representatives, District Authorities, UDA officials, ULB Commissioner and SPV head
    - SPV with board representation as [1-GoI, 6-GoK, 6-ULB & 2-Independent]

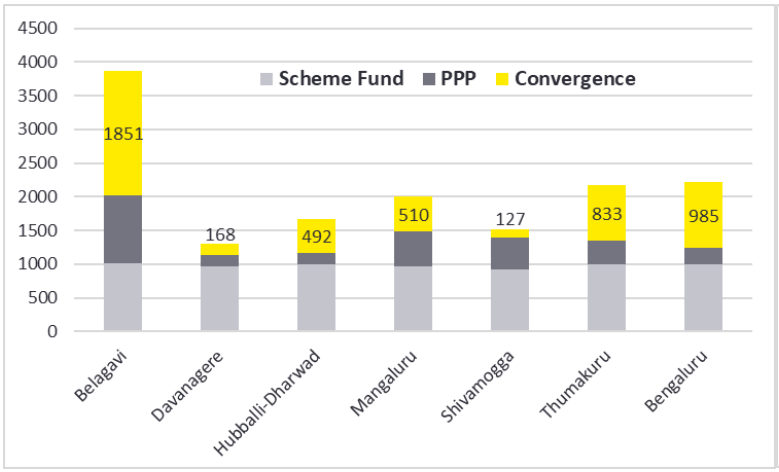


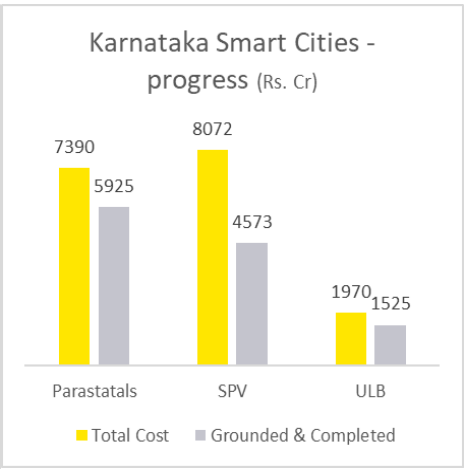
- KUIDFC's distinct HR policy had supported in attracting market talent, who were then positioned both at HQ and City level to augment the Mission implementation. Some highlights of the policy are:
    - Senior and mid-level positions are filled on permanent or deputation basis – through approval of Board
    - Project level positions are identified and approved by the concerned empowered committee for approving projects (here SCM HPSC)

- While a PMU functions at HQ under the concerned Task Managers handholding projects, Project specific Implementation Units (PIUs) functions at cities guided by cities and PMU
- A blend of State Establishment rules for scale, positions and allowances along with norms facilitating Board powers to fix market linked pay and performance appraisal has been adopted



- KUIDFC has also been able to augment financial resources for the Smart Cities (pooled mechanism) through various debt channels for convergence
  - Commercial Borrowings
  - Multi-lateral agencies
  - NIIF/KIPDF





- To guide and monitor the functions of the SPVs, a District level 'Smart City Implementation & Review Committee' had been approved by Govt. of Karnataka, comprising members MP, MLA, DC (District), Mayor, Leader of Opposition, Chairman (UDA), Commissioner (ULB), Commissioner (UDA) and MD (SPV).

Results/Impact:

Karnataka Smart Cities have envisaged over 800 projects worth nearly Rs. 17,500 Cr. across 7 cities. Through the support of KUIDFC, cities were able to leverage convergence funds to the tune of Rs. 6,240 Cr from State, National & IFI programs as well as from Finance Commission grants. It is also evident that while parastatals (predominantly KUIDFC) have grounded & completed nearly 80% of their share, SPVs through the support from KUIDFC were able to ground & complete nearly 550 projects worth Rs. 10,500 Cr.

Lesson learnt:

Active support and guidance from State Mission Directorate in the form of administrative, technical and financial resource augmentation has not only provided effective and efficient project implementation in

Karnataka Smart Cities but also enabled their parent ULBs to focus on conventional responsibilities even while being part of the scheme.

Replicability and Sustainability:

State level intermediaries in other States can similarly take up responsibilities to guide and monitor SPVs.

Fact Sheet:

Thematic area	Mission management
First-year of the program	2016 (wrt SCM)
Responsible institution	KUIDFC
Target audience	-
Coverage	Smart Cities within the State of Karnataka

5. Socially sustainable projects through SCM

Summary:

Bhubaneswar Smart City proposal focussed on 'creating a model of sustainable urbanisation based on new urbanism principles that have transformative potential to provide people with prosperity, safety and equity'. The strategic pillar on socio-economic development focuses on ensuring individuals have opportunities to meet their basic needs by creating equitable ecosystem that enables all citizens to reach their full potential.

Objectives and rationale:

- To increase availability and accessibility of social, health and other development programmes for the vulnerable and marginalised population.
- To implement youth-centric and youth-led integrated social intervention.

Key stakeholders:

- Bhubaneshwar Smart City Limited
- Bhubaneshwar Municipal Corporation (BMC)
- Humara Bachpan trust and Feedback Foundation for making BTCD slums ODF (implementing partner)

Implementation strategy:

'Socially Smart Project' in Bhubaneshwar, jointly run by United Nations Population Fund (UNFPA), Bhubaneshwar Smart City Limited (BSCL) and Bhubaneshwar Municipal Corporation (BMC) was set up with an investment of Rs. 1.06 Cr. The collaboration with UNFPA is to specifically support strategic direction of the SCP that covers public health, safety and social equity, and to contribute towards achieving improved safety and security through community partnerships and deployment of safe city solutions. The objectives of the intervention are:

- To develop a youth-centric and youth-led integrated social intervention model to support citizens connect initiatives.
- To promote safety and security of girls and women with specific focus on urban slums through community partnerships.
- Increase availability and accessibility of social, health and other development programmes for the vulnerable and marginalized population sub-groups.

This initiative provides training in self-defence, vehicle driving and self-leadership to the youth in slums, in the age group 10-25 years. *Source: (Bhubaneswar Smart, n.d.)*

Resource utilization:

The project cost is around Rs. 1.06 crores, out of which 50 lakhs is through Smart Cities Mission funds, rest through UNFPA.

Impact:

- Around 60 boys and girls have been trained as peer leaders in three phases who are now assuming leadership to address issues of slum dwellers.
- This initiative is operational in 76 slums within the city. At a later stage, the youth shall be linked to the suitable skill development programmes. Humara Bachpan Trust is the implementing partner for community mobilisation initiative.
- All 24 slums of BTCD area declared open defecation free after a successful intervention through community led total sanitation process by Feedback Foundation.
- Community mapping that tries to map various issues and challenges of community has been completed in 18 slums.

- Approximately 25,000 students reached through 200 programs organised across 80 educational institutes of the city to create awareness on various aspects of gender-based violence, and healthy lifestyle.
- Bhubaneswar Smart City Limited received 'Smart City Award' for its social intervention and community mobilisation initiative at Smart City Expo, Jaipur in 2018.

Key challenges and Lesson learnt:

Bhubaneshwar smart city has recognised the challenges faced by socially marginalised people and communities and thus formulated these initiatives.

Replicability and Sustainability:

The intervention was initially piloted in the 24 slums of BTCD area, has now been expanded to cover over 100 slums.

Fact sheet:

Thematic area	Social Sustainability
First-year of the program	2017
Responsible Institution	Bhubaneshwar Smart City Limited
Target audience	Vulnerable & marginalised population
Coverage	Bhubaneshwar, Odisha

6. Bengaluru ICCC's initiatives during Covid-19 pandemic

Summary:

The IT Capital of India, Bengaluru tapped its technological expertise to combat the COVID-19 pandemic. It made use of real-time data to track and monitor COVID-19 positive cases and patients who are home quarantined. BBMP developed a Coronavirus war room in record 24 hours. This 24x7 Command and Control Centre has mapped each such case using GIS, tracking health care workers using GPS and drawing up containment plan using heat mapping technologies.

Objectives and rationale:

- To track and monitor the movement of COVID-19 infected persons and to trace their contacts
- To integrate real time data from various stakeholders in order to contain the infection
- To monitor movement of essential services

Key Stakeholders:

- Bruhat Bengaluru Mahanagara Palike (BBMP)
- Bengaluru Smart City Ltd

Implementation strategy:

To effectively leverage the city's technology solutions, Bengaluru's Bruhat Bengaluru Mahanagara Palike (BBMP) along with Bengaluru Smart City and support from technology partners, set up a COVID-19 War Room which was assembled in 24 hours. It focuses on using real-time data to track citizens who test positive, those under home quarantine, as well as primary and secondary contacts of all positive cases. Geographic Information System (GIS) data is used to map COVID-19 cases and by early April, Bengaluru became the first Indian city to put out data on new COVID-19 cases daily.

The War Room runs continuously, and uses dashboards to integrate data from police, hospitals, and health department, among others. The strategy employed creates risk profiles of neighbourhoods, monitors distribution of resources to the areas that need it the most and monitors economic activity and movement in low-risk zones. Movement in containment zones and home quarantine is tracked through mobility data from phones, GPS and social media. GPS systems are also used to track the movement of healthcare workers and service vehicles. Citizens under quarantine receive regular calls from the War Room over a two-week period to check for COVID-19 symptoms.

To engage with citizens at this critical time, BBMP has released 59 bulletins, written in easy to understand language. The War room also serves as a virtual learning centre - some identified RWA heads interact directly with decision makers through video conferencing which helps in training them so that there are no gaps in the understanding of a containment zone and in-field operations. Apps to support home delivery, Sahaya Setu, hunger helpline for distribution of food had also been set up. The application also has a feature of containment zone analysis to recommend possible actions of enforcement.

Resource utilisation:

The ICCC in Bengaluru was commissioned at a cost of around Rs. 113 crores through SCM funds.

Impact:

- Real-time situational analysis efficiently monitored, aiding strategic planning and decision making.
- Model War Room Implementation Handbook was developed which is a simple to use operational structure with a checklist to see if or not a city is ICCC used effectively.
- Systems which included multiple dynamic forms to understand on ground activities were also developed by the organization.
- Systematic governance structures were set up so that all entities are managed well.
- In addition, the War Room also tracks and manages contact tracing and building awareness around COVID-19. The BBMP War Room case study has been virtually demonstrated before a committee to serve as a model for other cities to replicate.

Key Challenges and Lessons Learnt:

COVID-19 has given smart cities the opportunity to unleash their true potential and harness their quintessential role in disaster management using technology. Demonstration of adaptive leadership at such times, technology enabled, and people-centric responses, awareness and capacity building are some of the practices which Bengaluru and several other cities have exemplified. *Source: (MoHUA, 2020)*

Replicability and sustainability:

Several smart cities through their ICCCs have demonstrated commendable response in handling this unprecedented situation. Peer learning between cities could be undertaken to share unique experiences of handling such crisis to avert them in future.

Fact Sheet:

Thematic area	Using technology to improve city operations
First-year of the program	2020 (As COVID-19 war room)
Responsible Institution	Bengaluru Smart City Ltd & Brihat Bengaluru Mahanagara Palike
Target audience	Residents of Bengaluru
Coverage	Pan-city: Bengaluru, Karnataka

7. Visakhapatnam's park for differently abled

Summary:

The 'All Abilities Park' in Visakhapatnam is a neighbourhood level park, especially designed for differently abled children. Opened in 2018 and spanning 2156 sqm, the park is an example of open spaces that engage the users, is interactive and enhances visitor experience.

Objectives and rationale:

- To provide suitable infrastructure and services accessible to all citizens and every section of the society.
- The main goal was to ensure that the differently abled do not feel discriminated against in terms of entertainment avenues.

Key stakeholders:

- Greater Visakhapatnam Smart City Corporation Limited

Implementation strategy:

- The 'All Abilities Park' services the needs of the differently abled children without segregating them from the rest of the community. Built at a cost of Rs. 3.5 Cr, the park is equipped with sensory experiences including tactile pavements and textured walls.
- The park targets all types of differently abled users, including visually impaired, hearing impaired, those with physical disabilities.
- With the complete play equipment imported from Singapore which is mostly made of rubber makes it a safe design and also solves the problem of rusting and damage. Also, the park is constructed in such a manner that a person in a wheelchair can cover every corner of the park with ease. The park overlooks the Vizag coastline.
- To provide knowledge about plants, tire planting, a technique of growing plants in tires, has been incorporated at the park. The park gives an opportunity for children to express themselves on the large blackboard that has been incorporated on one side.

Resource utilisation:

This unique park has been built at a cost of around Rs. 3.5 crores through SCM funds.

Impact:

- The shortcomings in the existing park became the objectives of this intervention. Like lack of innovative and stimulating play spaces, reinforcing play areas with planting designs.
- Citizens' patronage to the park has been on the rise since 2018. Schools dedicated to differently abled students regularly ensure a visit to this park.
- This project showcases the city's strong emphasis on enhancing the social infrastructure in an equitable manner. Further, the park provides good quality open spaces and encourages citizens to spend more time outdoors, thereby aiding physical activity and healthy living.
- The 'All Abilities Park' seeks to balance the needs of the differently abled without isolating them from the rest of the community.

Key Challenges and Lessons Learnt:

- Small scale but impactful projects that promote equity, add value to the quality of life of citizens. Such projects are easily replicable.
- The major focus lies on 3 factors – Approachability, accessibility and usability of space.
- The project has aimed at exhibiting the city's strong emphasis on upgrading the social infrastructure which will also improve health of all its citizens.

Source: (Smart City Mission, n.d.) (Vizag City Magazine, 2018) (Urban update , 2017)

Replicability and sustainability:

Visakhapatnam smart city could become a trend-setter by introducing such an initiative. While several cities have built smart parks, this unique 'All-abilities park' has demonstrated an equitable and inclusive use of open spaces. Government officials from other states have now requested civic bodies from across the country to look into creating something similar for differently abled citizens.

Fact Sheet:

Thematic area	Public and open spaces, spaces for differently abled
First-year of the program	2018
Responsible Institution	Greater Visakhapatnam Smart City Ltd.
Target audience	Differently abled persons, children and the elderly
Coverage	Visakhapatnam, Andhra Pradesh

8. Chennai's pedestrian plaza promoting equity

Summary:

The Pondy Bazaar pedestrian plaza on Thyagaraya Road has successfully transformed one of Chennai's busiest and car-centric shopping streets into a pedestrian promenade by prioritising people over vehicles, and thus opening new ways for citizens to experience their streets. It was launched with much pomp and show on the 13th November 2019, by the Chief Minister of Tamil Nadu. This project was conceived with the intent of enhancing the shopping experience that Pondy Bazaar offers, by reclaiming public space for shoppers.

Objectives:

This plaza has been designed as a space accessible for all, including women, children, senior citizens and people with disabilities, thus enabling equitable mobility and enhanced accessibility. This is the first such street promenade in the city.

Key Stakeholders:

- Chennai Smart City Limited
- Municipal Corporation of Greater Chennai
- Institute for Transportation and Development Policy
- Shop owners on Pondy Bazaar

Implementation strategy:

- This project has been implemented in conjunction with Institute for Transportation and Development Policy (ITDP) under the 'Streets for People' initiative. The plan for a pedestrian plaza in T. Nagar was in the works much before the launch of the Smart Cities Mission. The Corporation of Chennai created a blueprint for a pedestrian-friendly walkway; however, the plans did not see the light of day until the project was included in the ambit of the Smart Cities Mission.
- This transformation of around 700m street stretch, created safe walkways on both sides, provided ample shaded seating arrangements, landscaping, colourful play elements and placemaking, at a cost of Rs. 40 Cr. Battery-operated shuttle carts also ferry passengers along the stretch.
- It has 7 play areas for children, clusters of seats under trees and planters have been set up. They have made provisions for underground utilities including electricals, telecommunications and metro water lines.
- The stretch now has seven play areas for children, clusters of seats under trees and planters have been set up. Provisions have been made underground for utilities including electrical, telecommunication and metro water lines (Citizen Matters, 2020).

Resource Utilization:

The pedestrian plaza project has been implemented in three reaches, totalling Rs. 40 crores.

Impact/ Outcomes:

- Wide footpaths and parking spaces have replaced the chaos caused by traffic at the shopping hub. Street vendors have been shifted into a building called the 'platform shop owners business complex', which was commissioned by the Greater Chennai Corporation, as per Madras High Court's 2013 order.

- Along with other similar initiatives taken up by the city under ‘Streets for People’ program, Chennai was awarded the Ashden Award 2020 in sustainable mobility (international) category. (ITDP, 2020) (Chennai smart city , 2019)

Challenges/ Lessons Learnt:

The plaza is an example of successful public participation. Getting most of the shopkeepers on board has been a great success story and also the biggest challenge.

Replicability & Sustainability:

With the success of the pedestrian plaza, the city now plans to scale up the work by redesigning and developing streets in other parts of Chennai, thus enhancing mobility, utility and liveability.

Fact Sheet:

Thematic area	Walkability, equity
First-year of the program	2019
Responsible Institution	Chennai Smart City Ltd
Target audience	Pedestrians, cyclists
Coverage	Pondy Bazaar, Chennai

9. Jabalpur's mobile app for citizen's accountability

Summary:

Jabalpur Municipal Corporation sought to make civic services easily accessible for its increasing population. To address this, Jabalpur Smart City has launched a citizen centric mobile app (Jabalpur311) to enable citizens access a range of civic services using their smartphone. This is a one-stop solution to manage, supervise and regularise cities, using smart phones (compatible with both Android and iPhone). The app is designed for the convenience of citizens as well as the officers of the Corporation regarding various day-to-day government information tasks. Using Jabalpur 311 app citizens can directly avail the facilities and services from the Corporation through their mobiles. The app contains an administrative module namely Smart City 311 for the Corporation Officers.

Objectives and rationale:

- To enable citizens of the city to access a range of civic services using a smartphone like – Online Application for Birth and Death Certifications, Property Tax, Water bill payment, Helplines for Jabalpur Police, ambulance service, women helpline, children helpline, senior citizen helpline, etc.

Key stakeholders:

- Jabalpur Municipal Corporation
- Jabalpur Smart City Ltd

Implementation strategy:

This mobile app enables online application, tracking and service request fulfilment for services such as - birth and death certificates, payment of property tax, water bill, building plan approval, applying for ration card, police helpline, ambulance service, request for water tanker, booking a community hall, helpline for women, children and senior citizens. Apart from these real time traffic conditions and parking information, etc. can also be tracked through the app. Developed at a cost of around Rs. 1 crore, this app is a pioneer in m-Governance services and being accountable towards citizens. The prime objectives are:

- Helpdesk facility to contact all the emergency contact numbers.
- Availing the online services for the various facilities/ activities available under the Corporation.
- Real time data related to city traffic for best route options leads to saving of time.
- Facilitate services available in nearby localities.
- Facilitate logging of complaints and taking feedbacks and suggestions for the advancements and betterment of the localities.
- Integration with the social networking modes to make available the facility of contacting also through such medium.
- Users can lodge complaints regarding water supply, electricity, garbage collection, streets, encroachments, etc. and can also provide suggestions on various government schemes.
- Nearby services information is available for public toilets, police stations, bus stand, taxi stand, hospitals, 24x7 pharmacy stores, schools, ATMs, registered plumbers /carpenters /contractors/ electricians, etc.

Using Smart city 311 administrative module the officers can track and monitor the status of various projects and could take necessary actions on them effectively as needed. This module further has sub-modules for field inspection, GPS based attendance, GPS based road checking, project tracking, work-flow management system and a central support system for logging complaints and monitoring the resolution via window ticketing management.

Resource utilization:

The initiative has costed around Rs. 1 crore which has been financed through Smart City Mission.

Impact:

As of September 2020, this application has been downloaded by more than 10,000 citizens. The grievance resolution rate has been more than 90 per cent (MoHUA, 2018).

Lessons Learnt:

Simple steps towards citizen accountability like launching a mobile application for service requests and grievance redressal are easily replicable solutions. *Source: (URAIA, Smart city solutions, n.d.)*

Replicability and Sustainability:

Similar m-governance applications can be replicated by other smart cities to enable online citizen centric services to their citizens.

Fact Sheet:

Thematic area	Citizen accountability, m-governance
First-year of the program	2016
Responsible Institution	Jabalpur Smart City Ltd.
Target audience	Citizens of Jabalpur
Coverage	Pan-city: Jabalpur, Madhya Pradesh

10. Incubation Centre at Gwalior

Summary:

Dreamhatcher Incubation Centre (DHIC) is an initiative of Gwalior Smart City Development Corporation Limited (GSCDCL) as a system of nurturing early-level start-ups by offering them infrastructural, management, monetary and networking aid. DHIC extends assistance to start-ups in terms of consultation, business plan assistance, growth acceleration, product prototyping, workplace space, infrastructure, mentorship and aiding in all degrees of investment.

Objectives and rationale:

- To serve as a catalyst between the government bodies, private sector and institutions.
- To mobilize the different components of the innovative ecosystem.
- To define, oversee, and organize the different projects and activities derived from the innovation and entrepreneurship strategy with different stakeholders.

Key stakeholders:

- Gwalior smart city development corporation ltd (GSCDCL),
- All India Institute of Local Self Government
- Indian Institute of Entrepreneurship, Innovior and Mobilepedia.

Implementation strategy:

- The incubation centre to provide budding entrepreneurs a requisite ecosystem where they will be able to replicate their business ideas. Indian Institute of Entrepreneurship (IIE) to assist in designing and organizing training & research activities and also provide expertise in short listing of applicants, driving their start-ups and decide milestones for incubates.
- DHIC goals are to provide applicable, timely and targeted support to play an essential role in developing and sustaining start-ups, in turn leading to employment generation and wealth creation.
- DHIC Incubation Program is divided into two phases i.e., Anveshan and Gurukul.
- Anveshan, is the ideation phase. If the start-up has an idea, he/she can come at the centre discuss the idea with the team and team along with sector specific mentors will help them develop the idea into a profitable business model.
- Gurukul, is the incubation stage. Under this stage, the start-up has a developed product, or a prototype and the team is going to help them modify, upgrade the product or prototype. Also, it will help them with the other facilities such as financial, marketing support, etc.

Source: (All india institue of local governance , 2020) (Dreamhatcher Incubation Center)

Impact:

- The sectors that the incubation includes agriculture and allied fields, biotechnology, building materials/construction technology, electricity, new and renewable energy and environmental sustainability, education, food processing, health and pharmaceuticals. information & communication technology (ICT), sensor technology, new materials including nano materials, water, sanitation and solid waste management, any other emerging areas.
- The various institutions covered in the programme include premier educational institutions.
- They conduct sessions where the students and aspiring entrepreneurs come up with various innovative start-up ideas. Currently, they have selected 10 aspiring entrepreneurs who presented their business ideas in the areas of renewable energy, traffic management system, agro-technology, engineering, ITES etc.
- Selected ideas which are scalable along with ideas which have relevance with the Smart Cities Mission to be incubated under this initiative. This will be done after a thorough screening process. Currently, they have around 20 start-ups under them.

- They are providing various facilities like co-working space, conference rooms, office supplies, canteen facility and high-speed internet services. In DHIC powered by Gwalior Smart City Development Corporation Limited, office working space for the selected Start-ups is 100% free.

Resource utilisation:

This initiative has been commissioned at a cost of Rs. 3.2 crores through SCM funds.

Replicability and Sustainability

To encourage start-up ecosystem, smart cities can further their cause by establishing such incubation centres. Cities like Pune, Amritsar, Surat, Jhansi, Sagar, etc. are similarly implementing start-up centres to facilitate aspiring entrepreneurs.

Fact Sheet:

Thematic area	Start-up ecosystem
First-year of the program	2019
Responsible institution	Gwalior Smart City Ltd
Target audience	Aspiring entrepreneurs
Coverage	Gwalior, Madhya Pradesh

11. Agra micro skill development centre for local women

Summary:

As Agra is globally known for its tourism potential, various arts, craft and fine work exists in this city. However, the major problems of the targeted population in Tajganj are unemployment of women and livelihood insecurity. Targeted households face lack of capital and productive assets; do not have required skills and capacity to involve with sustainable livelihood activities. They do not have access resources. High levels of inequity and social marginalization exacerbate overall poverty and livelihood insecurity. This gender inequity results in further marginalization of women. Lack of exposure combined with inadequate access to markets and opportunities limits employment and income generating opportunities. Skill development for employability is being used as an agent of change in promoting women's employment. Engaging the women section of Tajganj area with the income generating activities through micro-skill development centres and skill enhancing trainings will definitely improve the life of the residents. The project involves development of 4 micro-skill development centres to impart traditional skills; zardosi embroidery and stone inlay to women in the area.

Objectives and rationale:

With the objective of improving livelihood opportunities for women, a project that promotes traditional skills - zardosi work and stone inlay, has been taken up by Agra Smart City. The main objective is to focus on women empowerment and their socio-economic growth along with the promotion of local art. It also provides skill development trainings to target SHGs. It has also targeted to establish micro skill centres.

Key stakeholders:

- Agra Smart City Ltd.
- Local Self-Help Groups

Implementation strategy:

The project is focused on women empowerment and their socio-economic growth, blended with promotion of local arts and craft. This project strengthens the economic opportunity for women in Tajganj area (part of ABD area in Agra) through skill development initiatives coordinated through Self-Help-Groups (SHGs).

Impact:

Around 104 women SHGs have been identified comprising 1024 women members in Tajganj area. The expected outcomes are well established micro-skill centres, increased capacity of SHGs with micro-entrepreneurship skills, recognition of traditional art, and a well-developed portfolio of products that sustain livelihoods of local women, establish linkages with other resources, increased stakeholder's participation, increased awareness among the community, improved socio-economic condition of SHGs, inventory of handicraft and other livelihood resources, etc.

Android application, Brochures, booklets and other IEC (as per requirement) will also be developed highlighting the SHG's interventions and products which will be developed during the project. The quality IEC will support the SHGs to promote their products and services not only on a domestic basis but internationally. Exposure visits of the community groups including women section will also give the strength to the project *Source: (Agra smart city, 2018).*

Key Challenges and Issues

The ratio of working and non-working population in Agra is 32 per cent workers and 68 percent non-workers accordingly. Among the working & non-working population; 13.2 per cent women comes under working population and rest of the 86.8 per cent are non-working women. This data clearly indicates the poor state of women employment in Agra. Most of the examples reflects that, men are more likely to participate in livelihood generation activities than women.

Replicability and Sustainability

Several smart cities have taken up developing micro-skill development centres to empower local workforce and promote local products and culture.

Fact Sheet:

Thematic area	Women empowerment, skill development
First-year of the program	2018
Responsible institution	Agra Smart City Ltd.
Target audience	Women Self Help Groups
Coverage	Agra, Uttar Pradesh

12. Nashik's protective measures taken before, during and after floods

Summary:

Considering its geographical location, Nashik is vulnerable to various kind of hazards like flood, earthquake, drought etc. The potential and past occurrences of various natural disasters have had long lasting impacts on human lives, livelihoods and property of the city. In view of this, the district administration felt the urgency of undertaking an emergency response plan in order to minimize the negative impacts of a possible natural calamity in future. Thus, the city initiated an important task of updating the District Disaster Management Plans.

Objective and rationale:

- To improve the preparedness measures during flood conditions in the city of Nashik.
- To develop a comprehensive integrated long-term plan for Disaster Management for any climatic conditions.
- To reduce disaster impact on health care facilities, schools, roads, infrastructure etc.

Key stakeholders:

- Smart City Development Ltd.
- Nashik Municipal Corporation
- District Disaster Management Cell

Implementation in practice:

An integrated approach was adopted to strategize the activities being undertaken to cover the various aspects of preparedness. The plan covered various aspects of preparedness measures before, during and after the flood disaster situation in both rural as well as urban areas of Nashik city. Considering the fact that the city had been experiencing very to very heavy rainfall over the year 2019, the municipal corporation along with its disaster management cell formulated a well-organized and integrated disaster management plan for the city. Disaster risk management component contains, multi-level plan preparation, capacity building at various levels through trainings, community awareness, create resources database with coordination at district administration and line departments, multi sector and multi-disciplinary actions for mitigate disasters with pre-during and post disaster activities, resource mobilization and technical assistance.

Resource utilisation:

Funding’s from State Disaster budget and regular disaster resource from Nashik Municipal Corporation, District Collectorate & Central Governments Smart City Mission funding. There would be a compensation of Rs. 10,000/- for rural areas and Rs. 15,000/- for urban areas for affected families. In addition to this, a compensatory amount of Rs. 75,000/- would be given for small businesses that have suffered the respective damages during the flood disaster.

Impact:

Nashik is a city where the normal and high flood situations arises frequently on each and every year. For this, a well-organized and well-prepared disaster management system had been necessary. This year’s disaster management plan and system has impacted effectively, which can be used a baseline for planning the disaster management initiatives in future.

- The development of disaster management plan at an early stage led to increased preparedness for the disaster. All the information about damages, diversions, restoration was shared with the public through press conferences, Twitter, Facebook, etc. ensuring the effective implementation of precautionary measures
- Minimization of infrastructural and human health loss was observed due to extensive preparedness for the floods.
- Reduced vulnerability and increased accessibility to food supply during the event of disaster

Key challenges and Lessons Learnt

Challenges faced were lack of communication systems for effective and speedy relief operations; alternate road infrastructures are to be constructed in quick time where there submerged roads and other infrastructures in high flood conditions. *Source: (NIUA, n.d.)*

Replicability and Sustainability

Thorough revision of disaster management plans could be undertaken by smart cities to update and equip the ecosystem with flood preparedness, mass awareness and extensive community engagement for adoption of city-wide flood precautionary measures to reduce vulnerability.

Fact Sheet:

Thematic area	Climate resilience, flood management and mitigation
First-year of the program	2019
Responsible institution	Nashik Smart City Ltd
Target audience	Flood prone areas of Nashik city
Coverage	Nashik, Maharashtra

13. Florence's smart, climate resilient projects

Summary:

Florence in Tuscany, Italy is not only a place with an impressive artistic heritage and literary history, beautiful landscapes, high-quality fashion and lifestyle, agricultural and gastronomy products, but it also has efficient digital public services, high-level industries in innovation and technology, and excellent training institutes. Florence has demonstrated how an integrated smart city plan focussing on climate change resilience, implemented in conjunction with local stakeholders can be tried and tested on a pilot basis in a small district, and then replicated further.

Objective and rationale:

- To understand climate risks and vulnerabilities and to integrate into projects the right improvements and safeguards to protect the city against climate change
- To understand the budgetary framework to finance these new resilient projects.
- To create new Green-Blue infrastructure on the Ema river for a range of measures from reduced heat island effect to improved water quality and increased biodiversity.

Key stakeholders:

- European Investment Bank
- Municipality of Firenze

Implementation in practice:

The demonstration pilot area is the Novoli park, a mixed-use area with residential and tertiary settlements with mobility infrastructure consisting of a highway, an airport, and a main station. Florence adopted energy efficiency measures for buildings; district heating with innovative seasonal solar thermal storage for social housing; smart grid and energy-demand management with smart metering and consumer mobile apps; public multi-vendor e-mobility infrastructure; advanced mobility services for citizens; data management and a smart city control room with intelligent systems. All these interventions were demonstrated in a small district, and then replicated and scaled up.

The solutions demonstrated were primarily:

- Energy efficiency in buildings – Retrofitting building envelope in social housing blocks
- Energy systems integration – District heating & cooling, thermal storage, smart streetlighting
- Mobility & Transport – Electric, hybrid & clean vehicles, public multivendor charging points
- Information & Communication Technology – Smart electricity grid, mobile apps for citizens

The model chosen for Florence was overseen by an '**internal steering group'** playing the role as 'project owner' and interacting with several 'habitat teams' formed by specific stakeholders and citizens. Every member of this internal steering group is in charge of a thematic area: the internal referees coordinate the subgroups and refer to the steering team about the results. The coordination activities are carried out inside the internal group.

Impact:

The interventions have led to energy efficiency - achieving energy savings in relation to the existing situation in building retrofitting and in district heating exploiting renewable energy sources integration, has enabled sustainable mobility - integrating sustainable modes like electric vehicles, recharging infrastructure and information mobility systems, and integrated ICT infrastructure - developing a smart city platform delivering sustainable and cost-effective services to citizens, while improving the efficiency and synergy in the use of local public resources and the delivery of public services.

Lessons learnt:

From citizen's participation perspective, the communication plan to engage stakeholders and citizens was created on the basis of two primary tools: non-stop institutional communication and direct participation. Citizens have been reached through social media activities and by interacting with associations and representatives. Thus, a multi-stakeholder institutional mechanism plays a critical role in guiding and coordinating complex interventions, which require effective stakeholder and citizen communication for ensuring desired outcomes.

Replicability and Sustainability:

Such climate resilient interventions could be scaled up to cover the entire city and could be easily replicated in other cities. The internal steering group model and extensive public participation and feedback is a model that could be explored by other cities too.

Fact Sheet:

Thematic area	Climate resilience
First-year of the program	2016
Responsible institution	Municipality of Firenze
Target audience	Residents of Florence
Coverage	Florence, Tuscany-Italy

Source: (European Commission, 2017).

14. Surat's ICCC - one of the earliest through SCM

Summary:

Surat operationalised its Integrated Command & Control Centre in 2016 to improve coordination with and integrate data from various arms of Surat Municipal Corporation and other departments. SMC has built a SMAC (Smart City) centre as an Integrated Command and Control Centre (ICCC) for effectively managing the city of Surat, including provision of good quality municipal/ allied services for the citizens.

Objective and rationale:

- To build a command-and-control centre and aggregate IT asset which is being utilized at different locations across Surat.
- To monitor different services of Surat Municipal Corporation at central location.
- To build an infrastructure which will be robust and scalable to integrate new services to be monitored in future as and when required.

Key Stakeholders:

- Surat Smart City Development Ltd
- Surat Municipal Corporation

Implementation strategy:

- The key features include monitoring city's BRTS network, traffic control/ policing, emergency services, grievance redressal, CCTV surveillance monitoring, streetlight monitoring, etc. Built at a cost of Rs. 32 Cr., Surat's ICCC integrates around 30 civic services and optimizes municipal asset utilisation. It thus comprehensively manages issues that improve the quality of life. The operation and maintenance of the centre is planned through PPP.
- The authority aimed to develop a robust system whereby inputs from different functional departments such as transport, water, drainage, emergency, IT, health etc. and can be assimilated and analysed on a single platform resulting in aggregated city level information.
- Post this aggregate, information at the city level can be converted to actionable intelligence or useful data which will be later circulated to relevant stakeholders and citizens for informed decisions.
- Citizens are being connected through variable message signs, website, mobile app, mobile alerts and social media. Thus, this integrated centre is a single point source in resolving all traffic & mobility issues to the satisfaction of citizens.
- The centre building has a floor area of 2,100 square feet, with a seating capacity of 22 operators and a meeting room.

Impact:

- By providing a holistic view of the key functions for managing the city, the command centre enables civic officials to optimise allocation of resources, adopt preventative maintenance measures, and proactively manage issues that affect quality of life of citizens.
- It enables integrated operations, informed decision making, gives real time data analysis.

Resource utilisation:

The control centre has been commissioned at a cost of Rs. 69 crores through SCM funds.

Lessons learnt:

- City wide digital interventions like ICCCs to integrate and monitor city operations is the most prominent improvement in civic administration catalysed by SCM. Based on needs and requirements of each city, the ICCCs may incorporate appropriate solution components for the facility to truly become city's civic management centre.
- With the implementation of this project, Surat Smart City Development Ltd (SSCDL) is able to monitor traffic movement, control the smart street lighting system and maintain a bird's eye surveillance of the city. This centre is collecting functional information of all the departments and public on a real-time basis and helping all the departments in maintaining civic service delivery standards on a day-to-day basis.

Source: (Smartnet - Surat Smart City, 2017) (Surat Smart City, n.d.)

Replicability and Sustainability:

This ICCC in Surat was one of the earliest ones to get commissioned under SCM. Till date, over 60 cities including tier 3 cities have developed or are developing ICCCs. The idea is to integrate different services to run city operations in a convenient and cost-effective manner.

Fact Sheet:

Thematic area	Use of technology for city operations
First-year of the program	2016
Responsible institution	Surat Smart City Development Ltd
Target audience	Residents of Surat
Coverage	Pan-city: Surat, Gujarat

15. Ujjain's smart classrooms, contributing to SDG4 – Quality Education

Summary:

Smart Classroom is an initiative taken up by Ujjain Smart City to enhance the learning outcomes of school children in government schools, using diverse technique and empower teachers by training them to use interactive techniques and multimedia content.

Objective and rationale:

To implement smart classrooms in municipal schools to provide better access to digital learning to students.

Implementation strategy:

- The project is to be implemented in 5 schools and around 97 classrooms of these schools will be converted to smart classrooms. These schools are mostly government schools.
- For explaining the content, various forms of multi-media and short video snippets will be used along with 2D & 3D animations, graphics, etc. The content will be downloadable and printable. Also, Q&A format that may be used for assessment.
- The software and content is being updated as per need or daily. The system will be online and will be connected to a central system.
- The whole system is recommended to work on a SaaS (Software as a Service model), where education content is available on the local computer and content is updated online in real time.
- Apart from the regular content, additional content will also be made available for free.
- The subject teachers are able to upload the content in any form via pen drive or external hard disk in an effective way as the software and hardware of the system integrated is very flexible. Also, the content can be able to be played in an offline mode too.

Impact:

- With smart classrooms, knowledge assimilation and retention amongst school children has increased.
- This non-stressful and interactive environment has enhanced their learning experience
- The students have better access to high quality educational materials. Even the teachers have been provided better systems and digital solutions.

Lessons learnt:

By using smart classroom technology and interactive whiteboards, information can be illustrated with the help of photos, maps, graphs, flowcharts and animated videos. This makes learning more attractive, interesting and easy to understand. It encourages the ability of students to learn and memorize the topic for a prolonged period of time. In contrast to the traditional learning method, smart classrooms are time saving technology.

Source - (USCL, n.d.)

Replicability and Sustainability:

Several cities like Solapur, Tumakuru, Ajmer, Dharamshala, Amritsar, Hubballi-Dharwad, Kakinada, Gwalior, Indore, Davangere, Satna, Udaipur, Moradabad, etc. are developing such digital infrastructure in municipal schools thereby enhancing the learning experience of students.

Fact Sheet:

Thematic area	Digital classrooms, digital education
First-year of the program	2018
Responsible Institution	Ujjain Smart City Ltd
Target audience	Students in municipal schools
Coverage	Ujjain, Madhya Pradesh

16. International cooperation in development of Smart Cities – USTDA

Summary:

United States Trade Development Agency (USTDA), the nodal agency of the U.S Government has been providing catalytic support for Infrastructure Development under the Indo-US bilateral cooperation – through grants for feasibility, pilot projects and technical assistance programs. USTDA's South and Southeast Asia region has a robust India program, which has supported India's efforts to develop its infrastructure for over three decades. USTDA's portfolio in India includes transportation and energy infrastructure development projects that typically have an Information Communications Technology overlay. In January 2015, USTDA entered into Memoranda of Understanding with the Indian states of Andhra Pradesh, Rajasthan, and Uttar Pradesh that outline USTDA's partnership role in development of three smart cities namely – Visakhapatnam, Allahabad & Ajmer.

Objectives:

To leverage USTDA's expertise in building energy, transportation, telecommunications and water infrastructure in India, this initiative intended to deploy many tools to respond to the increasing demand for innovative solutions in Indian cities.

Implementation in practice

- In addition to its existing portfolios, the USTDA had added Smart Cities portfolio in India. The Smart Solutions for Smart Cities initiative utilizes U.S. industry expertise to deliver advisory and project preparation services to support comprehensive, sustainable urban infrastructure development throughout India.
- In Uttar Pradesh and Rajasthan, USTDA had offered to provide on-the-ground consultancy services to support Allahabad and Ajmer's Smart City challenge preparation.
- While in Andhra Pradesh, USTDA had partnered with the Municipal Administration and Urban Development Department on a planning framework, development strategy and a set of high-priority investment projects for smarter urban development in Vishakhapatnam.
    - The projects were envisaged to leverage innovative technologies, data analytics and delivery approaches to close gaps in public services, reduce congestion in logistical systems, and improve access to urban amenities.
    - The goal was to enhance economic competitiveness and improve quality of life in Visakhapatnam.
    - A phased assistance plan had been undertaken, wherein Phase-1 supported in reefing Visakhapatnam's smart city vision; evaluated the baseline of the urban infrastructure; assessed institutional and regulatory frameworks; identified sector-specific opportunities; and developed an action plans for two near-term smart city projects.

    - Phase-2 developed an Integrated Smart City Master Plan for Visakhapatnam. In addition to proposing urban planning frameworks for the entire pan-regional planning area, the Master Plan also provided detailed frameworks for four key urban centers, including integrated analysis and recommendations across eight identified smart city components.
    - Phase-3 envisaged to accelerate the implementation of five infrastructure projects identified in the City Infrastructure Project (CIP); connect U.S. companies to the present and future smart cities activities in Visakhapatnam; and bolster the technical capacity for the city of Visakhapatnam to sustainably implement smart city infrastructure projects.

- Apart from the above support, the USTDA had also organized a series of Reverse Trade Missions (RTMs) to host officials from the state governments of Andhra Pradesh, Rajasthan, and Uttar Pradesh and the city governments of Visakhapatnam, Ajmer, and Allahabad in the United States to connect them with U.S. best practices and technologies that enable cities to be integrated, efficient and safe.
    - In February 2016, USTDA hosted a delegation from the State Government of Andhra Pradesh and the City of Visakhapatnam in Washington, D.C., New York, NY, and the San Francisco Bay Area, CA.
    - A similar RTM was held in January 2017 and brought officials from the State Government of Rajasthan and the cities of Ajmer, Jaipur, Kota and Udaipur to Washington, D.C., Austin, TX, and Denver, CO.
    - Finally, in March 2018, a USTDA RTM took officials from Allahabad and Uttar Pradesh to Boston, MA and Pittsburgh, PA.

- The RTMs included meetings and site visits that highlighted specific case study examples of how U.S. cities and metropolitan areas have integrated their operations to achieve greater efficiency and effectiveness in delivering services to their citizens.
- The Indian delegations met with U.S. federal, state, and city leaders, as well as representatives from U.S. companies to learn how their innovative and effective smart city solutions support integrated planning and implementation of critical city infrastructure.

- In 2020, the USTDA in collaboration with the World Bank and MoHUA had partnered to support in development of the National Urban Innovation Stack (NIUS) - a cutting-edge smart city tool to drive innovation, data-driven governance and capacity building across more than 100 Indian smart cities. The tool is envisaged to support India's goals of inclusive and sustainable urban development through a consortium of digital platforms, including e-governance applications, smart payments and training modules for its government workforce.
- The USTDA has offered $1.5 Mn grant for undertaking a feasibility study for development of the National Urban Innovation Project – which consists of the National Urban Innovation Hub ("NUIH") and National Urban Innovation Stack ("NUIS"). NUIH and NUIS will comprise two parallel and mutually compatible infrastructure and platform components under MoHUA.

Impact:

- All three cities – Visakhapatnam, Ajmer & Allahabad have not only successfully emerged as Smart Cities in the challenge process but also have developed robust city transformation plans in alignment with their local aspirations and global context.
- Cross-cultural exchange experiences and technical learning have enhanced individual capacities of officials while also supported in better understanding of city planning, design, management aspects impacting citizens Quality of Life.

Lessons learnt:

India's Urban Transformation vision to create globally competitive cities by providing better quality of life and sustainable communities would require multi-pronged partnership approach – City, State, National and International.

Replicability and Sustainability:

Such international cooperation programs can act as platforms for knowledge, resource and trade exchange while deepening strategic long-term relationships among partnering countries.

Fact Sheet:

Thematic area	International co-operation and bilateral partnerships
First-year of the program	2016 (wrt SCM)
Responsible institution	USTDA
Coverage	Visakhapatnam, Allahabad & Ajmer

Source: USTDA, EY analysis

17. Bhubaneshwar's Common Payment Card

Summary:

Bhubaneshwar Smart City Ltd. along with ICICI Bank has developed a Common Payment Card System (CPCS). 'Odyssey' city card, is a unique offering that enables residents to make quick and easy payments for an array of services at different points-of-sale, such as public transportation systems, municipal bill payments, utility payments, parking, retail, recreation, amusement and other payments within the area of Bhubaneswar Municipal Corporation. This project has been implemented under Build, Operate, Manage and Transfer mode.

Objective and rationale:

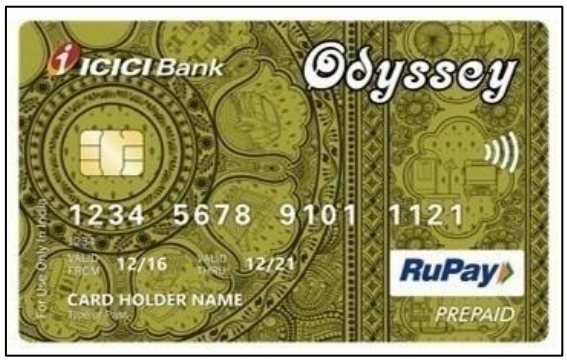
- To overlay a digital payment eco-system for the city.
- To enable citizens in accessing a unified system for all government and non-government services.
- To promote faster and hassle-free mode of transactions.

Key stakeholders:

- Bhubaneshwar Smart City Ltd
- ICICI Bank

Implementation strategy:

Common Payment Card System provides safe digital monetary transactions reducing citizens' dependence on cash for transactions. 5 lakh such cards are being disbursed through 325 point-of-sale machines maintained at a grid of 500 metres in the city. This system is expected to be the mainstay for the city's digital payments ecosystem. Users can recharge their card by either paying cash at the designated counters or digitally through the online customer portal. Revenue sources for the concessionaire include rights towards cost recovery and advertising rights on the smart card, as well as 10% revenue share from transaction charges from non-municipal payments.



What is unique is that one does not require bank account opening to avail this card, can be used on regional buses as well, and can be linked to various government incentive programmes too. The card can be recharged by UPI/online portal or cash top-up which is available at all listed outlets and BRTS stations. The issuance fees for personalised card is Rs. 75, while that for a non-personalised card is Rs. 50.

Resource utilization:

This is a pan-city project and the total cost is around Rs.19.19 crores. The implementation was done in 8 months and the O&M is for the next 48 months as per the contract. This project is done through B-O-M-T mode where the implementing agency is the ICICI bank.

Impact:

By August 2020, around 16,000 such multi-utility cards had been issued.

Lessons Learnt:

Prepaid multipurpose common mobility cards like Odyssey Card enable cashless transactions across multiple fronts. It is an excellent example of how civic authorities along with private participation can together enable create a city-wide ecosystem of digital payments.

Replicability and Sustainability:

Cities like Jammu and Indore have also opted the PPP way to commission their common mobility card plans. Other smart cities could explore scaling up such successful initiatives

Fact Sheet:

Thematic area	Public private partnerships
First-year of the program	2018
Responsible institution	Bhubaneshwar Smart City Ltd.
Target audience	Commuters in Bhubaneshwar
Coverage	Bhubaneshwar, Odisha

Source: (SmartNet NIUA, n.d.) (Bhubaneshwar Smart City Ltd, n.d.)

C. Atal Mission on Rejuvenation and Urban Transformation

1. Increasing access to infrastructure and property values through urban investment in Mexico

Summary:

Urban Mexico has been a hectic place to live over the past decades. Rapid urbanization coupled with the dramatic increase in violent crime has put pressure on the social fabric of Mexican cities. The Mexican federal government under Ministry of Social Development created the Habitat program in 2003 in order to provide infrastructure investments to marginalized urban parts of the country and to provide public resources to improve the quality of life in these communities. Investments included construction of roads, water and sanitation systems, lighting, and sidewalks, as well as community centres, parks, and sports facilities. Habitat also provided funds for activities outside of infrastructure investments, such as job training and health and nutrition training for young mothers. This program represents an injection of federal spending into the development of local infrastructure more typically provided by municipal governments.

Objective and rationale:

The main objective was to provide urban infrastructure and improve the poor maintenance of the existing ones. This would also help in accelerating the economic growth. Through this initiative, it would create jobs in a short term and raise overall economic productivity. By providing these, it also aimed to reduce the costs for activities such as transportation.

Key stakeholders:

- Inter-American Development Bank (IDB)
- Government of Mexico Social Development Secretariat (SEDESOL).

Implementation strategy:

The Habitat programme focused on cities or metropolitan areas with more than 15,000 people. Within each of these cities, the Ministry of Social Development identified polygons or priority attention zones eligible to receive program support. These polygons were groups of neighbouring blocks with more than 50 percent of the households living in poverty. In cities where this condition could not be met, polygons could include neighbouring blocks in which 30 per cent of the households were assessed to be living in poverty. In 2004, field studies were conducted to verify the eligibility criteria, and authority identified 3,125 polygons were eligible to receive support. This programme has been implemented from 2003 to 2006. Furthermore, Habitat had identified the beneficiaries in a spatial manner, using a geographic information system (GIS) to define geographic perimeter outlining of neighbourhood that met the criteria for inclusion. Programme has been implemented through bottom to top institutional approach. Member of selected neighbourhoods in the program received advice from Habitat program officials on requirement of infrastructure investments to be made. Then local government officials and neighbourhood leaders (community participation) would identify the most essential infrastructure needs and local governments then used Habitat resources to invest for development of such infrastructure necessities subject to spending caps imposed by the federal government.

Resource utilization:

The Habitat programme has a plan of US$68 million infrastructure investment in 60 municipalities across 20 different Mexican states. Under this programme, the local state and municipal government has committed to a cost-sharing agreement with the federal government. The municipalities provided 40 percent of programme funds, the states provided 8 percent, and the beneficiaries had a share of 2 percent of programme fund.

Impact:

There has been large improvement witnessed in the access to well-functioning public lighting, paved roads, and sidewalks; private investment in the housing stock increases. Furthermore, crime rate has been fallen and meaningful improvement has seen in public security. Major Impact of this programme on various parameter is tabulated below.

Parameter	Impact After Habitat Programme
Access to Infrastructure: Piped water, Sewerage service, Electric lighting, Streetlight, Medians, Sidewalks, Paved road etc.	• Overall, access to infrastructure has been increased by 10.3% • Functioning of streetlights have been increased from 56% to 62% • Access to median has been increased from 59% to 67.7% • Access to sidewalks increased by 9% ~ from 59 percent pre-Habitat to 68 percent • Access to paved road has been increased by 10% ~ from 66 percent pre-habitat to 76 percent • Access to sewerage, piped water, and electric lighting were already high in most neighbourhoods, and witnessed limited significant changes on average.
Private Housing Investment and Property Value	• The number of houses with concrete floors increased by around 2.5 percentage ~ from 96.5 percent pre-Habitat to 99 percent • The number of houses with a flush toilet increased from 61 to 63 percent • The amount of rent paid by households have been increased by US$17 per month, a nearly 20 percent increase from a pre-Habitat value of US$88 • It was estimated that property values in Habitat neighbourhoods increased by an additional US$5.76 per square meter ~ from US$86.11 per square meter in pre-Habitat to US$ 91.87 per square meter. Cumulatively this amounted to a total property value increase of US $150 million, more than two times the $68 million invested in the Habitat program
Moving Rates	• In Habitat neighbourhoods, the rate of residential migration dropped by 7 percentage • Even though Habitat increased rents, the program reduced the moving rates of homeowners and renters alike. Non-Habitat neighbourhoods have seen moving rates of 58 percent for renters and 37 percent for non-renters

Key challenges and Lessons learnt:

Provision of basic infrastructure created multi-fold value to the residents in the short and medium-term. AMRUT Mission is covering similar project components and similar studies can help quantify benefits to the citizens.

Replicability and sustainability:

AMRUT Mission is taking a similar approach to projects development. Beneficiaries inputs along with other local stakeholders are captured at the project planning stage. Similar approach has been taken for the SCM as well. This ensures that the projects are prioritised and selected such that the citizens are engaged in decision-making and accrue benefits from the projects.

Fact Sheet:

Thematic area	Economic growth linked with investments in urban infrastructure
First-year of the program	2009
Responsible institution	Inter-American Development Bank (IDB), Government of Mexico Social Development Secretariat (SEDESOL).
Target audience	All citizens in cities with greater than 15,000 population
Coverage	Mexico

Source: *(American Economic Journal: Applied Economics, 2018), (J-PAL, 2018), (Research Gate, n.d.)*
https://pubs.aeaweb.org/doi/pdfplus/10.1257/app.20160429https://www.povertyactionlab.org/evaluation/increasing-access-infrastructure-and-property-values-through-urban-investment-mexico,https://www.researchgate.net/publication/255632641_THE_EFFECTS_OF_HABITAT_ON_BASIC_INFRASTRUCTURE

2. Bihar's scheme on providing water connections to all households

Summary:

The Bihar State Government has introduced **Mukhyamantri Shahri Peyjal Nishchay Yojana** under **'Har Ghar Nal Ka Jal'** scheme to provide clean and safe drinking water to all households in urban areas with water pipeline connection by 2019-20. Under this Scheme, it is targeted to remove all the handpumps, on which the urban people depend for their water needs. It is roughly estimated that around 1.95 lakh households would benefit under this programme.

Objective and rationale:

To provide potable water facilities to rural and urban areas along with community participation.

Key stakeholders:

The Panchayati Raj Department, The Public Health Engineering Department in the rural areas, The Urban Development and Housing Department in the urban areas - Bihar Rajya Jal Parishad (BRJP), Bihar Urban Infrastructure Development Corporation (BUIDCO), Public Health Engineering Department (PHED).

Implementation strategy:

To fulfil these goals, the state government has launched three schemes, of which two are meant for rural areas and the third one for the urban area. In the rural areas, two of these schemes, Mukhyamantri Gramin Peyjal Nishchay Yojana (Quality Affected Areas) and Mukhyamantri Gramin Peyjal Nishchay Yojana (Non-quality Affected Areas) are being implemented, the first one covering those areas where the quality of water is infected by arsenic, fluoride or iron and the other covering non-quality affected areas. The scheme is being implemented through Bihar Rajya Jal Parishad (BRJP), Bihar Urban Infrastructure Development Corporation (BUIDCO), Public Health Engineering Department (PHED) and Urban Local Bodies. All projects have been allotted the funds as per following norms: 30 percent of the total fund required would come from the Fifth State Finance Commission, 2.30 percent of the fund required would come from the Fourteenth Central Finance Commission, and the rest of the funds would be provided from the State plan head. Funds have also been raised through the convergence with AMRUT scheme and bi-lateral agency. A snapshot of funding strategy is shown here.

Funding Strategy
• 99,079 HH in 32 towns under State Plan being executed by BRJP • 6,05,148 HH in 21 towns under AMRUT being executed by BRJP • 1,44,504 HH in 2 ADB schemes and 3 JnNURM Schemes being executed by BUIDCO • 7,22,912 HH in 116 ULBs under Nishchay Yojana being executed by ULBs

In the FY 2019-20, it is observed that work has been started in 2,034 wards out of 3340 wards and 3 lakhs households have been provided with potable water supply.

In order to provide clean and safe drinking water to all households in rural areas through community participation, the State Government introduced **Mukhyamantri Gramin Peyjal Nishchay Yojana.** The scheme is being implemented by the Panchayati Raj Department. This scheme is being implemented in phase wise by taking up small and micro water supply schemes. The requirement of water will be fulfilled through boring, submersible pumps and distribution pipelines. The cost of water supply works will be met by convergence of funds available on the recommendation of the 14th Finance Commission and 5th state finance commission and the state plan fund.

Resource utilization:

The State planned projects by taking up projects in complementary areas using complementary funding sources/schemes. This approach ensured that the State achieves larger geographical coverage of water supply projects.

Impact:

In the FY 2019-20, total 26.39 lakh households have been provided with potable safe & drinking water facilities out of 71.16 lakh households and out of 58,612 rural wards, work is under progress in 35,775 rural wards and has been completed in 28,665 rural wards.

Furthermore, Public Health Engineering Department is also mandated to provide potable safe & drinking water facilities to 3814 Fluoride affected rural wards, 5,085 Arsenic affected rural wards, 21,598 Iron affected rural wards and 25,582 non quality affected wards respectively under the **Mukhyamantri Gramin Peyjal Nishchay Yojan** in quality affected area across the State.

Key challenges and Lesson learnt:

Alignment of State government schemes helps expand coverage to areas beyond the scope of AMRUT scheme.

Replicability and sustainability:

The approach taken by Bihar state government is being replicated by other States as well (Andhra Pradesh, Odisha, etc). It requires robust planning of coverage of the identified projects – this requires coordination at the State-level among the various agencies. The SLNAs take up this role of coordination and ensuring complementary nature of projects or the convergence of funding.

With this approach of complementary coverage and convergence in funding, the governments can aim to reach out to a larger population. Since the Central government cannot fund all the projects, this approach will help in a sustainable strategy to providing basic services to more citizens.

Fact Sheet:

Thematic area	Convergence with State government schemes
First-year of the program	2016
Responsible institution	Bihar Rajya Jal Parishad (BRJP), Bihar Urban Infrastructure Development Corporation (BUIDCO), Public Health Engineering Department (PHED) and Urban Local Bodies
Target audience	All ULBs
Coverage	Bihar, India

Source:https://www.adriindia.org/images/report/1549963202Economic-Survey-2019-EN.pdf, https://www.bvm.bihar.gov.in/nishchay/content/OFZZNXFGZSsvV3pkNmRha2ZzZ3hvUT09, https://www.bvm.bihar.gov.in/content/3751/drinkingwatersanitationruralandurbandevelopment

3. Wastewater treatment: Reverse Osmosis established at Kodungaiyur & Koyambedu, Tamil Nadu

Summary:

Owing to water scarcity in the region, sewerage and wastewater treatment is not only one of the major components of AMRUT scheme, but also, it is one of the State priorities in Tamil Nadu. In this context, the Hon'ble Chief Minister of Tamil Nadu made an announcement under Rule 110 in the State Assembly that the wastewater must be recycled and reused and basis of the announcement, Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB) had proposed to setup wastewater treatment plant (Tertiary Treatment Reverse Osmosis) with a capacity of 45 MLD each at Kodungaiyur and Koyambedu.

Objective and rationale:

To fulfil the needs of water-intensive industries in Chennai. To reduce the burden on the ground-water resources.

Key Stakeholders:

Tamil Nadu Sustainable Urban Development Project (TNSUDP), Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB); contractors appointed are VA TECH WABAG for Koyambedu Project, M/S BGR Energy System Ltd for Kodungaiyur project,

Implementation strategy:

The two wastewater treatment plants were proposed to be developed with private participation in Design, Build and Operate model for a period of 15 Years.

Earlier, the cost of construction was proposed to be arranged under the scheme of JNNURM and Tamil Nadu Investment Promotion Program (TNIPP) for development of Koyambedu project. However, there was no realisation of funds under JNNURM scheme from GoI. It was decided to arrange the construction cost through AMRUT Scheme. The same was sanctioned on 10 January 2017 by SLHPSC.

Similarly, for Kodungaiyur plant project, construction cost was proposed to be arranged under the scheme of Tamil Nadu Sustainable Urban Development Project (TNSUDP) with financial assistance from World Bank during initial stage. Later, it was decided to converge with AMRUT Scheme and the same was sanctioned by SLHPSC on 06 April 2017.

Resource utilization:

For Koyambedu wastewater treatment plant, a total INR 396.50 Crore has been estimated towards the cost of construction and Rs. 197.6 crore has been envisaged towards the operation and maintenance cost for period of 15 years. Similarly, for Kodungaiyur wastewater treatment plant, a total INR 235 crore is the estimated construction cost and INR 205 crore is the operation and maintenance cost for 15 years

Impact:

The Koyambedu's treatment plant has approximately 60 km pipelines for conveying the treated water to industrial parks of SIPCOT (Small Industries Promotion Corporation of Tamil Nadu). Treated water is being supplied to the industries located at the industrial parks of Sriperumpudur, Oragadam and Irungattukottai and approximately 691 industrial units are benefited from this project. The industries include Hyundai Motors, Nissan, Samsung India, Apollo Tyres and Nokia India. Similarly, Kodungaiyur's wastewater treatment project has approximately 28.5 km pipeline for conveying the treated water to industries located on the Manali-Ennore corridor and Manali-Minjur corridor in North Chennai.

Key Challenges and Lesson learnt:

AMRUT has recognized this requirement and projects have been converged and funded through the AMRUT scheme with appropriate central, State and ULB share. Proactiveness in decision-making and accountability, use of the latest technology and private participation (PPP mode), financial sustainability and project viability, interdepartmental co-ordination were the factors for completion of the projects in time. The DBO project also included a 15-year Operation and Maintenance period and was funded by the GoI funding and the Tamil Nadu Investment Promotion Program (TNIPP), demonstrating the local authorities' commitment in improving the difficult water conditions in the area.

Replicability and Sustainability:

The PPP model in these projects is a successful example that can be replicated in other States.

Fact Sheet:

Thematic area	Re-use of treated wastewater for industrial purposes
First-year of the program	2017
Responsible institution	State level nodal agencies, CMWSSB
Target audience	State government, industrial units
Coverage	Chennai, Tamil Nadu

Source: (T&RPPLANT AT KOYAMBEDU, 2018), (The Hindu, 2019) (New TTRO plant to quench the thirst of industries in Chennai, 2019)

https://chennaimetrowater.tn.gov.in/pdf/45MLDT.T&RPPLANTATKOYAMBEDU.pdf,
https://www.thehindu.com/news/cities/chennai/city-gets-its-second-tertiary-treatment-plant-at-koyambedu/article30119590.ece,

AMRUT Mission monthly Newsletters

4. Creating incentives to decrease waste-water in Zambia

Introduction:

Water scarcity is a major problem in arid and semiarid countries and excessive use of water also creates negative impacts on the environment. Therefore, proper water consumption is very essential for sustainable growth of any country. In this context, the Southern Water and Sewerage Company (SWSC) of Zambia has taken a step to encourage water conservation by providing the monetary benefits in terms of incentives to higher households' water consumers.

Objective and rationale:

To rehabilitate the core water supply network, rehabilitate and expand select water supply and sewage networks to peri-urban areas and improve select drainage infrastructure. To strengthen the service delivery and operational capacities between institutional structures.

Key stakeholders:

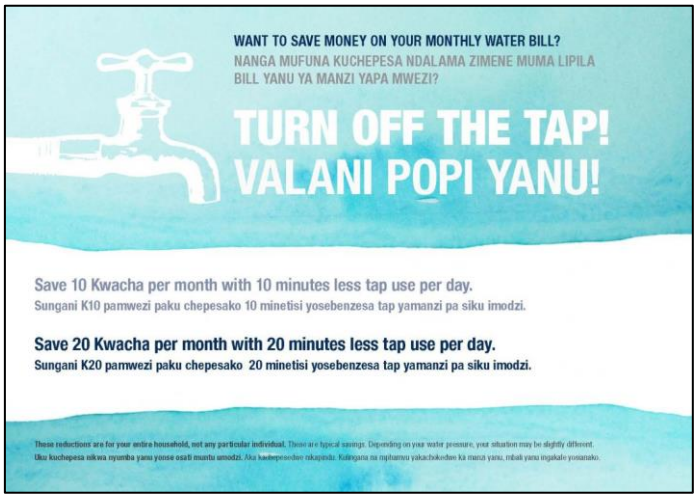
- Southern Water and Sewerage company (SWSC)
- Millennium Challenge Corporation (MCC)
- Government of Zambia

Implementation strategy:

The Southern Water and Sewerage Company (SWSC) provides piped water to residents of Livingstone, Zambia. Households are billed based on monthly meter readings and charged according to an increasing block tariff. Approximately, household spent around US$9.50 monthly for water usage. However, use of water depends on behaviour of all members in the households. It was noted that husbands paid the water bills in about 53 percent of households, and in about 80 percent, wives used more water than their husbands. The SWSC identified 1282 households for availing the benefit of this programme. A lottery system was invented by the SWSC for availing the monetary benefit. Most of households were enrolled in participating in the lottery and received information about water prices. Households that reduced their monthly water usage by at least 30 percent relative to their average water usage in the previous two months were automatically entered into the lottery. Each month, one in every twenty qualifying households won ZMW 300 (about US$30). By encouraging households to reduce their water use in exchange for a monetary reward, the probability of winning the lottery effectively served as an increase in the price of water. To gather additional insight on household dynamics, SWSC divided in three groups on who would receive information on the lottery as follows. One-third of households, both spouses learned about the lottery. In another third of households, only the wife learned about the lottery and in the remaining third, only the husbands were informed about the lottery. In households in which only the wife or husband were informed, these individuals were also paid privately if they met the water use reduction threshold and won the lottery (individual incentive). This initiative generated an increase in a specific individual's price for water.

Impact:

Households in which only one individual was offered the chance of winning a lottery, has experienced a reduction in monthly household water consumption to 6.1 percent. This impact was even larger among households in which the lottery information was directed to the wife in household i.e., a 11.5 percent reduction in water use has been witnessed. This lottery initiative has created an incentive for wife to conserve water, otherwise, these individuals do not financially benefit from saving less water, so do not put in enough effort to conserve water.



Key challenges and Lesson learnt:

This intervention has drastically reduced excess of water consumption. Results suggests, an effective way to reduce water consumption might be to

target incentives to higher household water consumers, through technologies or in-kind rewards, rather than changing household level pricing.

Replicability and Sustainability:

While this approach is complex for replication in India, pilot areas may be taken up in States and experimented. If similar results are observed, the same may be gradually scaled up to larger areas in cities.

Fact Sheet:

Thematic area	Financial incentives for water conservation
First-year of the program	2015
Responsible institution	Southern Water and Sewerage Company
Target audience	Urban population
Coverage	Livingston, Zambia

Source: (J-PAL, 2016), (MCC, 2020)
https://www.povertyactionlab.org/evaluation/creating-incentives-decrease-water-waste-zambia,
https://www.povertyactionlab.org/sites/default/files/research-paper/Enviro_Externalities-and-free-riding-in-the-Household_Jack Jayachandran_November2019.pdf

5. Happiness on tap: piped water adoption in urban Morocco

Introduction:

It is observed that households in developing countries spend considerable amount of time in fetching water. Improving access to safe drinking water is one of the Millennium Development Goals and accordingly many initiatives have been taken in the developing countries. With this regard, Morocco has planned for increasing access to safe drinking water by helping poor households get connected to piped water under “National Initiative for Human Development” programme.

Objective and rationale:

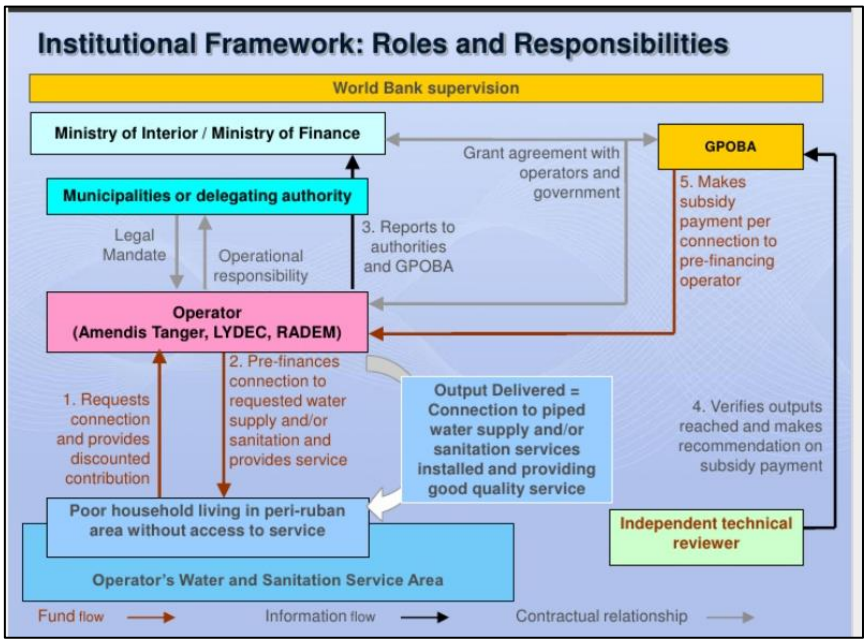
To connect poor households to the drinking water network and in turn to improve their physical health.

Key Stakeholders:

Amendis, Veolis.

Implementation strategy:

In Morocco, majority of households depend on public taps and spend more than seven hours a week collecting water, despite the higher density of water taps. This burden generates considerable amount of stress and tension. It is revealed that 66 percent of households without a water connection report that water is a major source of concern, 16 percent have had a water-related conflict within the family and 12 percent have had water-related conflict with their neighbours. In order to reduce such burden of water collection, M/s Amendis, an international private utility company, had launched a social program to increase households’ direct access to piped water in Tangier, Morocco in the year 2007. The Amendis program has offered low-income households pipe connection in three zones consisting of 4600 plots with interest-free loan to cover the cost of the water connection. The loan was to be repaid in regular instalments at MAD 105 (US$15) per month with the water bill over three to seven years depending on zone’s distance from the water grid. Initially, a door-to-door campaign was organised for identifying the households and beneficiaries have received information about the credit offer as well as hand hold supports have also been provided for administrative procedures needed to apply for the credit, preparing all the necessary paperwork and brought them to the municipal office for bulk approval.



Resource utilization:

	Number of Connections		Grant Amount (USD million)
	Water Supply	Sanitation	
LYDEC	6 218	6 218	3.5
RADEM Urban Areas	602	794	1.5
RADEM Rural Areas	1 209	-	
Amendis – Tangiers	3 200	3 200	2.0
TOTAL	11 229	10 212	7.0

Impact:

- Around 70 percent of households had purchased a connection to the water system
- No households had been disconnected from the grid for defaulting on their loan or on water payments, and 44 percent of households had paid all instalments on due date

- 20 percentage of Households were more likely to report having enough water for bathing and 16 percentage points more likely to report having enough water for cleaning
- The time that families spent fetching water decreased from half an hour per day to essentially zero and used the saved time primarily for leisure activities, such as watching TV and socializing
- Households were willing to pay a lot for increased water quantity and convenience. The saved time and the decrease in stress levels related to water collection increased households' happiness and social integration.
- Getting connected to the water system reduced risk of conflict or ill feelings between neighbours and increased overall quality of life.

Key Challenges and Lesson learnt:

Interest free credit can enable households to invest in lump-sum quality-of-life investments that can significantly improve welfare, even if they do not result in income gain. Further, the important effects on take-up of awareness program and campaign that simply reduced paper works and administrative barriers to get the tap connection. Further, high observed willingness to pay suggests that relaxing credit constraints for poor households and making credit access straight forward and transparent might be enough to generate important private investments in water connections.

Replicability and sustainability:

AMRUT projects provide to address the basic needs of citizens. The benefits, while not being quantified, are similar to the above initiatives. By providing water connections to household premises, citizens attain numerous tangible and intangible benefits. The positive impact is widespread and has been recorded.

Fact Sheet:

Thematic area	Impact of water connections to households
First-year of the program	2007
Responsible institution	Veolia, Amendis
Target audience	Urban population
Coverage	Tangiers, Morocco

Source: (Household Water Connections in Tangier, Morocco, 2019), (Water and sanitation for the remote hinterland of Morocco, 2020)

https://www.povertyactionlab.org/sites/default/files/research-paper/93%20Happiness%20on%20Tap%20AEJ%202012.pdf, https://www.povertyactionlab.org/evaluation/household-water-connections-tangier-morocco

6. Deoghar changed the face of a garbage dumping site to a park

Introduction:

Suratilona Park in Deoghar used to be a garbage dumping site for the residents in the vicinity. Deoghar Municipal corporation (DMC) decided to change the face of the barren dump site into a green and open space park under the AMRUT scheme.

Objective and rationale:

To reduce waste and effectively manage the waste.

Key stakeholders:

- Deoghar Municipal Corporation (DMC)
- Regional Centre for Urban and Environmental Studies (RCUES)
- Urban Development & Housing Department (Govt of Jharkhand)

Implementation in Practice:

In order to implement an integrated approach to Solid Waste Management Practices in Deoghar, Deoghar Nagar Nigam, entrusted the Consultancy work to Regional Centre for Urban and Environmental Studies (RCUES), Lucknow, to undertake a study of the existing collection, transportation, processing and disposal activities of solid waste management and suggest an appropriate strategy for optimal service delivery keeping in view the economic, environmental, social and institutional dimensions. RCUES Lucknow conducted a comprehensive study, carried out the 1 waste quantification and quality surveys in order to prepare a comprehensive integrated solid waste management system for the Deoghar city. In consultation with the citizens, DMC planned to develop a park spread over 5.31 acres of land with an estimated cost of INR 1 Crore. The project was started in November 2016 and the park was formally opened to the public in January 2019. The initiative has not only provided the much-needed open space to the residents but also controlled the pollution.

First, DMC shifted the dump site to the city outskirts, and the existing garbage at site was segregated and the dry garbage was shifted for further processing. The bio-degradable wet garbage was used to produce manure required to rejuvenate the land, which had turned into an infertile land.

Based on consultations with the community, various components such as walkways, children's play area with equipment, food court, parking area, LED lights etc. were considered as part of the design and execution plan.

Resource utilization:

Sharing of capital cost shall be in the ratio of 70% Government to 30 % private. This structuring is kept ensuring increased interest of private sector so that to ensure healthy competition in tendering at the same time the capital investment to the tune of 30% by private party will make him accountable in respect of operation and maintenance.

Impact:

The area has now been transformed to a green cover including plants of different species. The park attracts people from all age group these days as the area has been elevated into an active green space alongside recreational facilities. In the coming years the park is envisaged to be transformed into a botanical garden. This project has not only increased the amenity values of the city but unlock the land potential for recreational activities and further it would stimulate surrounding market value of land.

Earlier the area used to be a garbage dumping site

Children's play area in the Suratilona Park

Horticulture works at Suratilona Park

Replicability and Sustainability:

Similar opportunities are available in all ULBs. Cost of Operation & maintenance shall be recovered under three heads i) Revenue from sale of products of waste processing ii) Revenue from user charges iii) revenue from O&M grant in the form of viability gap funding. Private party shall be responsible to generate the desired revenue from first two heads whereas state/central government shall ensure to provide the desired viability gap funding.

Key Challenges and Lesson learnt:

This is one of the best practices to unlock the potential of land through rejuvenation of waste dumping yards.

Source: (Environment Clearance, 2019), (Govt. of Jharkhand, 2019)

7. Micro-tunnelling methods used in sewerage project – Ahmedabad Municipal Corporation

Introduction:

Establishment of sewerage pipe network within a city is a complex activity. This requires permissions from various department such as railways, NHAI, traffic department etc. to dig the road and laying the pipelines. Further, the traditional pipe laying process takes much more time and has hindrances to carry the work during monsoon as well due to the traffic congestions, water blockage etc. Hence, in order to avoid such challenges, Ahmedabad Municipal Corporation (AMC) has been using Micro-tunnelling technology for laying of sewerage pipeline under the AMRUT scheme. The advantage of using this technology in congested area, across the highway and railway crossing is to eliminate disturbance to the existing traffic and ensure low environmental impact.

Objective and rationale:

To enhance the sewerage capacity of the city, and to avoid waterlogging in the city.

Key stakeholders:

Ahmedabad Municipal Corporation (AMC)

Implementation strategy:

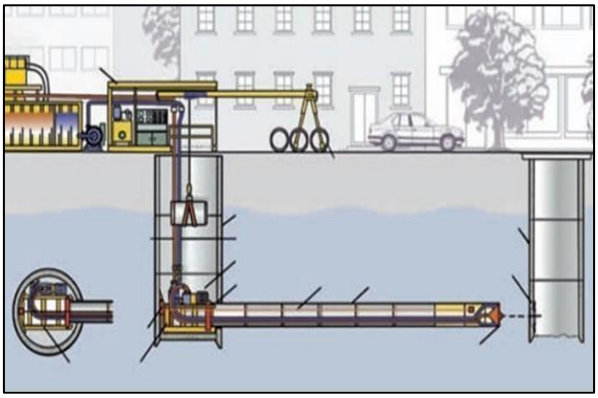
AMC is among the first municipal corporations in the country to adopt micro tunnelling technology to install underground drainage lines. Currently, the technology is being used to lay drainage lines in western part the city - Vadaj to Mahalaxmi Crossroads and passing through Sabarmati riverfront. The project is being carried out at a cost of Rs. 120 crore for a stretch of about 6.5 km. The lines will be of different diameters of 1400 mm, 1600 mm, 1800 mm and 2200 mm against 450 mm lines under the existing network. A similar line is also being planned for transporting of storm water in the eastern part of the city with an estimated investment of INR 125 crore.

Resource utilization:

The project was carried out at a cost of Rs 120 crores in the span of 2 years.

Impact:

With the implementation of these projects, waterlogging issues will be eliminated substantially in the city as the pipelines being laid have the capacity to evacuate 500 MLD of storm water. It is noted that waterlogging has been resolved to the extent of 90% in the city. Some locations from where waterlogging complaints were received, the water receded within an hour. Earlier, it took at least eight hours for water to be cleared. Despite heavy rains, there was no waterlogging reported from the underpasses. Further, several lakes also received new water, including the ones at Chandola, Makarba, Hebatpur, Vastrapur and Chandlodia.



Key challenges and Lesson learnt:

Advantages of micro tunnel technology have been able to achieve the objective in terms of managing the storm water drainage in the city. Further by using this technology, cost and time over run have not been witnessed and completed within the timeline without any hindrances. Hence, it can be attributed that an advance technology and financial sustainability and appropriate design of AMRUT scheme are major success factors of the project.

Replicability and Sustainability:

The technology is now readily available and hence can be taken up by all ULBs across the country.

Source: (Ahmedabad Mumbai Mirror, 2019), (Ahmedabad: Overflowing of sewerage lines to be a thing of the past soon, 2019)

https://ahmedabadmirror.indiatimes.com/ahmedabad/civic/waterlogging-at-18-spots-compared-to-208-last-year/articleshow/70506261.cms

8. Global technology initiatives in water management

Introduction:

WINT Water Intelligence Technology detects leaks in real-time using artificial intelligence. WINT devices alert maintenance staff about the water leakages and can also shut off the water automatically. The technology is being used in commercial establishments and industrial units where water leaks can cause damage to machinery and adjoining facilities. Some of the examples include Facility management(FM), Hospitality, Enterprises, Data Centres and Mission Critical facilities, during Construction, and Cooling Towers. A device is connected to the water pipeline, which records the digital patterns of water flows in the pipe. Over time, the AI recognises flow patterns and detects anomalies when they arise. The system sends alerts to the facility managers. While this technology is being used for specific commercial purposes, similar approach can be taken up at city-level for leak detection in water supply networks in ULBs.

Objective and rationale:

To prevent damage from water leaks, and to improve sustainability by significantly reducing water consumption.

Implementation Strategy:

The Water Intelligence device connects to a water pipe and records digital patterns of typical water flows through the pipe. WINT uses advanced artificial intelligence (AI) to recognize these patterns over time, such as a toilet flushing or a water faucet flowing in the sink, and to perform real-time water-flow analysis in order to identify anomalies, waste and leaks at their source. If an anomaly is detected, the Water Intelligence device sends an instant alert — such as a text or e-mail message — directly to the facilities manager's phone or device telling the FM the exact source of the leak, such as the floor where the leak is being generated and the type of device (e.g., toilet, lavatory sink, pipe etc.). The device then can automatically shut water off to that floor to prevent damage. The WINT approach also offers comprehensive analyses, reports and in-depth information into how much water a given leak would consume and expense over a period of time, allowing sustainability and FM teams to minimize usage and avoid damage.

Replicability and Sustainability:

The technology is not being used at a city-level network infrastructure since the cost-benefit of such large-scale implementation needs to be justified, especially in Indian scenario.

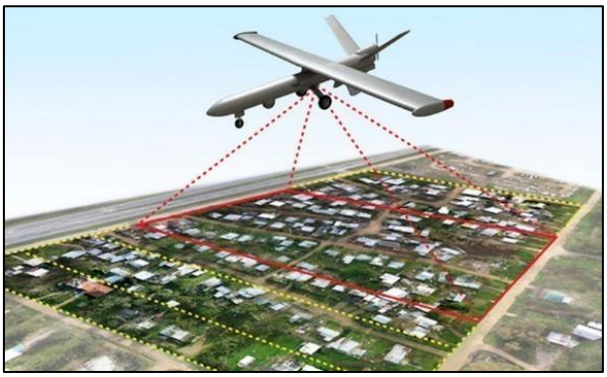
Source: (WINT, 2018), (The WINT Water Intelligence solution, 2019)

https://fmlink.com/articles/wint-ai-powered-leak-detection-water-conservation-system/ (accessed on Oct 20, 2020), https://wint.ai/solutions/ (accessed on Oct 20, 2020)

9. Unmanned aerial vehicles for GIS integration

Summary:

Formulation of Geographical Information System (GIS) based Master/Development Plans is one of the important reforms under AMRUT. The objective of this reform is to develop common digital geo-referenced base maps and land use maps using GIS and master plan formulation for all cities under AMRUT scheme. However, small and medium towns have limited capacity for formulating master plans by using conventional GIS technology and therefore Ministry wanted to explore Unmanned Aerial Vehicle (UAV) technology for formulation of GIS based masterplan these towns. In this endeavour, a committee for framing Design & Standards for application of UAV Technology for formulation of GIS based Master Plans for small and medium towns was constituted under the Chairmanship of Surveyor General of India (vide order no. K-14031/5/2016-AMRUT(CB)-Part(2) dated 26 September 2018).



: https://www.droneblog.com/2015/01/03/gis-mapping-service-and-significance-of-gis-services/ accessed on Aug 18th)

Objective and rationale:

The objective of current UAS survey is to prepare GIS based master plans for small and medium towns. To develop common digital geo-referenced base maps and land use maps using Geographical Information System (GIS) and Master Plan Formulation for 500 cities that are selected as AMRUT Cities.

Implementation strategy:

UAVs are increasingly being used for GIS integration and local area planning, especially in difficult terrains, owing to many advantages**.** A UAV, commonly known as a drone, is an aircraft without a human pilot onboard. It may operate either under remote control by an operator or autonomously by on board computers.

North Eastern Space Applications Centre has done more than 80 UAV surveys for different users in the North Eastern region. This UAV technology is not only used for formulating the GIS based master plan but also used in many other sectors such as construction of highways, railways, and power & utility projects, in agriculture, mining and in disaster management. Some of the examples of UAV technology are presented below.

- An autonomous agency of the Government of India, responsible for management of a network of National Highways has employed the use of drones for 3D digital mapping for Detailed Project Report (DPR) preparation of road widening for Raebareli – Allahabad Highway. Data collected is being utilized for calculation of compensation of landowners with property rights along the highway.
- National Railway System is planning to use drones to monitor the construction of its railway lines by 3-D mapping of dedicated freight corridor network of 3,360 Km project is envisioned (at bid planning stage). The entire corridor will be mapped using UAV technology.
- An Indian state-owned electric utilities company has obtained approval and started working towards implementing UAV for project monitoring in hilly terrains. The primary reason for PGCIL investing in deploying UAV is its cost efficiency
- An agency for coordinating response to natural or man-made disasters has deployed UAS for rescue and relief operations (locating of trapped citizens, providing relief packages etc)

Result/Impact:

Based on the specifications, UAVs can provide very high spatial resolution (up to 5-10cm/px) and help in 3D modelling. These operations are not affected by cloud coverage and are able to deliver high temporal resolution. The imagery obtained from UAVs can immensely support in many applications ranging from large-scale land mapping, urban modelling to vegetation structure mapping along with real time assessment and project monitoring activities under various applications. Furthermore, the technology is affordable and can be customized based on project requirements against few limitations.

Lessons learnt:

AMRUT has recognized the importance of application of advanced technology such as UAVs for GIS integration for formulating land use-based plan in small and medium towns. This advanced technology along with proactive government decision for adopting the technology and formulation of standard guideline for preparing master plan by using UAVs are major success factors for achieving the objective of reforms under AMRUT scheme.

Replicability and sustainability:

UAVs are being widely used for various purposes including spatial mapping at a large scale. With improving technology and design of UAVs, their replication across even more functions is expected in the near future.

Source: (AMRUT, 2016), (Formulation of GIS based Master Plans for Small and Medium Towns, 2020)

https://www.ey.com/Publication/vwLUAssets/ey-make-in-india-for-unmanned-aircraft-systems/$File/ey-make-in-india-for-unmanned-aircraft-systems.pdf,

https://nesac.gov.in/uav-applications/, http://amrut.gov.in/upload/uploadfiles/files/designandStandards_AMRUT(3).pdf, http://www.tcpo.gov.in/sites/default/files/newfile/dron-min.pdf

10. Udaipur sewerage project: Convergence with SCM and PPP model for implementation

Summary:

The domestic sewage generated by Udaipur city is a potential threat to the environment and the aesthetic look of the city lakes. Being a major national and international tourism destination, the city needed to streamline the sewage system which was becoming an area of concern for the administration. In this regard, an integrated and comprehensive sewerage treatment plan for entire city of Udaipur has been prepared by Udaipur Municipal Corporation under AMRUT and Smart Cities Mission. In line with the comprehensive plan, multiple projects have been approved under AMRUT Scheme (SAAP 1 & 2) with an estimated cost of approximately Rs. 160 crores. Another Rs. 229 crores of sewerage project have been approved under the Smart Cities Mission. Setting up decentralised sewerage treatments plants (STP) of total 40 MLD capacity with an estimated cost of Rs. 80 crores is among one of the major projects and the fund for the STP projects have been proposed through the smart city mission scheme.

This project has been converged with the AMRUT scheme as most of pipeline network, house connections and other sewerage related projects are being funded through the AMRUT programme. These components are required to complete the entire sewerage network plan. Therefore, entire sewage network, household connections, STPs have been proposed through the convergence of AMRUT and Smart Cities Mission funding.

Objective and rationale:

To improve the existing infrastructural facilities in the city, to clean and rehabilitate and remove obstructions in the existing facilities and to provide a proper waste management facility.

Implementation strategy:

Earlier, Udaipur had one 20 MLD capacity STP which had been constructed through PPP mode in a Hybrid Annuity Model (HAM) with a capital cost of INR 170 crore in the year 2014. M/s Hindustan Zinc Limited (HZL) was the private partner for development of existing STP project with 15 years O&M period.

Furthermore, considering the current and future demand, the Nagar Nigam had proposed to augment the existing sewage system capacity from 20 MLD to 60 MLD by introducing 3 more STPs at Eklingpura (25 MLD capacity), FCI Godown (10 MLD) and Kazrali House (5 MLD) in HAM model with 15 years concession period.

In July 2017, HZL signed an agreement with Udaipur Smart City Limited (USCL) for design, construction, supply, installation, testing, commissioning and operation of an STP of 40 MLD (25+10+5) capacity. This includes O&M for 15 years under HAM - 40% capital cost shall be borne by the Nagar Nigam and 60% capital cost shall be borne by M/s HZL during the construction period. HZL will have 75% of treated water from 25 MLD STP and 15 MLD STP output will remain with USCL. After commissioning of the STPs, INR 12.80 Crore as upfront and INR 1.28 crore as annuity shall be paid to HZL for period of 15 years. As on 30 June 2020, 25 MLD plant has started operations and 10 MLD plant under commissioning and 5 MLD plant under process.

Impact:

This project has resulted in improving the ecosystem of the lakes and freshwater consumption has correspondingly reduced in the city. Water quality of the Ahar River, Pichola and Udai Sagar lakes will be improved due to reduced volume of wastewater discharges from the city. The results and overall impact of this initiative has been appreciated by the State Government. With the completion of project, ULB will be able to treat 100% of Udaipur City's sewage and significant reduction of freshwater consumption at the operational site. At present, the sewerage plant covers 20.3% of the Udaipur city. But after the completion of the above projects, the coverage would be 62.5%. Further, substantial amount of treated wastewater will be used in Hindustan Zinc Industrial complexes and considerable amount would also be used in horticulture.

Key challenges and Lessons learnt:

With thoughtful planning and extremely well executed public private partnership model (PPP), HZL was able to transform the sewage condition of Udaipur city. They are expanding their capacities as per the need of the city and the funding for this is made available as and when required. Favourable policy such as Rajasthan's State Sewerage & Wastewater Policy 2016, funding arrangement through convergence of AMRUT and Smart City programme and successful HAM model are major success factors of the Udaipur STP project.

Source: (Sewearage Project, 2018), (Udaipur Smart City, 2017)

D. Pradhan Mantri Awas Yojana (Urban)

1. 'Sites and Services' initiatives of World Bank for housing development

Summary:

Globally, 1970s upwards national governments shifted their approach towards self-help housing paradigm with 'sites and services' as one of the fundamental alterations in policy from public provision to enabling people in private housing construction. Between the early 1970s and end of the 20th century, the World Bank invested in 100 sites and services projects across 53 countries with a total investment of USD 14.6 billion. Out of this USD 1 billion was invested in India with an average implementation of 8 years across the projects. The objective of the program was to provide housing for poor through provision of small serviced plots with neighbourhood facilities. However, the project was discredited and ultimately abandoned in mid 1990s due to various mixed reactions and factors. After 20 to 30 years of the project implementation, the projects have worked, with neighbourhood fully built accompanied by heavy capital investment by the users, highlighting the ultimate outcome achievement.

Objectives:

The objective of sites and services programs was delivery of incremental housing for the poor through the provision of small serviced plots with neighbourhood facilities and sometimes with a core housing unit. It targeted 27 cities in India across different States.

Key Stakeholders:

- The World Bank
- Ministry of Housing and Urban Affairs (then Ministry of Urban Development)
- State Governments
- Urban Local Bodies
- Financial Intermediaries and other State Parastatals
- Economically weaker section and low-income group people.

Implementation Strategy:

In India, between 1973 to 1997, the World Bank supported 'sites and services' projects in 27 cities to provide 2.79 lakh plots with an investment of around USD 1 billion with an average implementation period of 8 years.

The projects were planned to create an integrated neighbourhood to provide for basic needs and livelihood opportunities as well. The project had the following components:

- Physical components: Building plots for the dwelling units, basic facilities like drainage, sewage, water, roads, solid waste collection services etc. was the core component of the projects.
- Social components: The provision of social services has been an essential aspect of preparation of sites and services projects. Health and education facilities, community centres, and recreational areas were included in the projects depending upon the existing and proposed plans beyond the project.
- Economic services: Markets and commercial activities were also permitted for people's daily basic need and improve the overall standard of living.

Resource Utilisation:

- The first World Bank sites and services project in India was approved in 1973 in Calcutta. Between 1973 and 1997, the World Bank financed 11 projects in India with sites and services components, covering approximately 3,200 hectares and providing approximately 280,000 plots across 27 cities.
- There were two major project cities- Mumbai and Chennai where about USD 200 million was invested in developing 28 sites.
- Across two cities out of all the project areas under the project, in Chennai, 13 sites were developed, and 57,000 plots were delivered between 1977 and 1997.

- In Mumbai, the project delivered 88,000 plots and 17,000 apartments over 15 sites. However, almost none of the project sites had significant number of houses and residents by the time of project closure. This was cause of concern for State Governments and hence resulted in not pursuing for such initiatives after these projects (discussed in next paragraph).

Impact/ Outcome:

Cities, States and the World Bank witnessed mixed implementation experience, and hence this model was discredited and ultimately abandoned in the mid-1990s. The main factors for such experiences included projects taking too long, complicated in nature, 'leakage' of plots to the non-poor, and remotely located sites suffered low occupancy. As per the Owens, K. et. al, 2016, at that time evaluators measured projects based on defined rates of completion, cost recovery, and achievement of stated objectives within the project duration. As projects had limited lifespans, many projects could not deliver fully against these metrics and hence faced criticism. However, after 20 years of last 'sites and services' projects, the World Bank team visited the 15 sites in India across Mumbai and Chennai and witnessed thriving neighbourhoods in the areas which were once declared as failure projects.

- After 20 to 30 years, it has been recorded at multiple places that these projects have worked. Beneficiaries settled on these sites and invested incrementally to expand and improve their units. The 15 sites studied by World Bank showed that neighbourhoods were largely fully built with heavy capital investment, with less than 10 per cent of the vacant plots. People added spaces/ floors, upgraded amenities and invested in improving construction material, with most of the houses with 2 to 3 storeys suggesting the accommodation of expanding family needs over the generations or creating rental housing market in the serviced area.
- The unique design features such as provision of small serviced plots along wide range of plot sizes resulted in mixed-income neighbourhoods. The site planning norms followed in the projects created a hierarchical street grid and open space network that in turn improved walkability and quality of life. With the decision of inclusion of space for social infrastructure including schools, clinics and shops further enhanced convenience and liveability. As per the World Bank Study, the current neighbourhoods have these types of business, services and amenities which were envisaged under the plan which has resulted in mixed-use development and vibrant streets.
- World Bank assessed these sites through a 'Living Conditions Diamond Framework', which postulates that living conditions are a composite of four dimensions – the dwelling unit, infrastructure, tenure and the neighbourhood. It was found by authors that these projects have succeeded in delivering across all the four dimensions.

Challenges/ Lessons learnt:

Such initiatives have showcased the results over a long duration, much beyond the project lifespans. The recent World Bank study of Chennai and Mumbai projects demonstrate that incremental housing can work especially for low-income groups which can expand based on availability of capital with them over time. Further, it is highlighted by Gulayani, S., 2016, that city government can use these sites and services approach with well-defined planning norms to shape future urban growth. Complementing this incremental development process with neighbourhood planning, it has potential to develop inclusive, compact and liveable neighbourhoods. Overall, it can be stated that one of the positive aspects of this approach is its recognition of the ability of people to build houses on their own with support from Government agencies. Hence, shifting the role of Government from 'provider' to 'enabler', which has worked well in case of BLC component that needs to be expanded for future generations.

Replicability and Sustainability:

Sites and services created a paradigm shift in national housing policy moving governments from slum demolition and housing construction to the provision of fully serviced plots. The Sites and Services initiative taken by the World Bank although was declared to be a failure project but proved to be successful in the longer period. It suggests that we have a tool that can be deployed both for creating affordable housing and managing urban expansion.

Fact Sheet:

Thematic area	Integrated development for urban poor with focus on self-development/ incremental housing
First-year of the program	1973
Responsible institution	World Bank, State Government, Municipality, Ministry of Housing and Urban Affairs.
Target audience	Low-income families
Coverage	India - National

Sources:

Gulyani, S, and Connors, G. 2002, Urban Upgrading in Africa: A Summary of Rapid Assessments in Ten Countries*. Washington, DC: World Bank; Owens, K., Gulyani, S., and Rizvi, A., 2016, Success when we deemed it failure? Revisiting Sites and Services Projects in Mumbai and Chennai 20 Years Later (Draft); The World Bank Social, Urban, Rural and Resilience Global Practice; Gulyani, S., 2016, Success when we deemed it failure? Revisiting sites and services 20 years later, World Bank blogs, published on sustainable cities; Srinivas, H., Sites and Services, Urban Squatter and slums, Urban Environment Management, The Global Development Research Centre, India; World Bank, 1974, Sites and Services Projects- A world Bank Paper.*

2. Town Planning Scheme (TPS) contributed towards success of AHP projects in Gujarat

Summary:

The Town Planning Scheme (TPS) is a land pooling and readjustment mechanism that allows the city to appropriate land from private landowners for public purposes, such as roads, open spaces, low-income housing, underlying utility infrastructure, and other health, education and community services. This mechanism was put in place through the Bombay Town Planning Act of 1915 and was more widely used in cities of Gujarat after 1999 amendment to the current Gujarat Town Planning and Urban Development (GTPUD) Act of 1976.

Objective:

The primary objective of the TPS is to provide is to carry out the land pooling and then readjust the land uses to provide urban services, housing and commercial areas with focus on all income segments including urban poor. Cities of Gujarat have been implementing TPS which has contributed to the generation of land for public purposes. In Gujarat, one of the objectives of TPS is also to provide housing for “socially and economically backward classes of people” (SEWS), (This term is used in the GTPUD Act, 1976), which is similar to affordable housing zone.

Key Stakeholders:

In Ahmedabad city, the key stakeholders involved in this initiative are:

- Government of Gujarat
- Ahmedabad Urban Development Authority (AUDA)
- Ahmedabad Municipal Corporation (AMC)

Implementation Strategy:

The complete TPS model is based on a two-stage process - a macro-planning stage and a micro-planning stage. In the first stage, the development authority draws a statutory, decadal development plan (DP) for the whole town showing where the city is expected to expand into the surrounding countryside. In the second stage, the expansion area is divided into a number of smaller areas. The Development Authority then, in a phased manner, takes up each of these smaller areas for the development of a Town Planning Scheme (TPS) there. These TPS are extensively used in the Gujarat cities. Ahmedabad Urban Development Authority (AUDA) has been instrumental in implementing it.

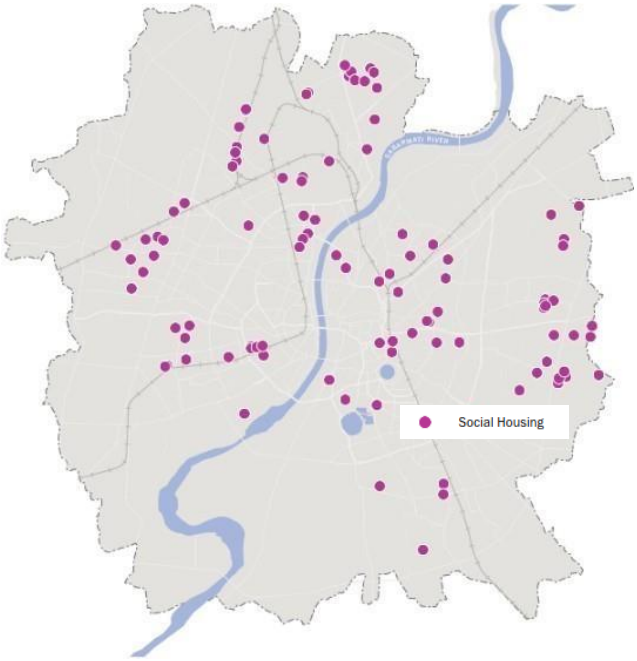
- The entire city of Ahmedabad has been developed using the town planning scheme mechanism since the enactment of the very first Act – the Bombay Town Planning Act 1915.
- The GTPUD Act, 1976 includes a provision for allocating up to 10 per cent of the total land of the scheme area to provide housing for “socially and economically backward classes of people” (SEWS) (This term is used in the GTPUD Act, 1976), which is similar to affordable housing zone. This provision has ensured supply of land for ‘affordable housing’.

Resource Utilisation:

- In Ahmedabad AUDA along with AMC actively pursue TPS for new are development that helps in improved urban expansion.
- To enable rapid implementation of TPS, AUDA initiated reforms in the Town Planning Act. These reforms were supported by Government of Gujarat.

Impact/ Outcomes:

- From 2002 to 2013, based on the data of 103 town planning schemes covering an area of about 154 sq. km, around 4.52 sq. km area was appropriated for affordable housing. On the same lines, AUDA developed a model scheme of Prahladnagar, wherein out of total area of about 161 ha, 13 ha of land was appropriated for developing low-cost housing.
- Such a provision of reservation of land for social housing has ensured availability of land for creating affordable housing in high land value neighbourhoods.
- Land made available through Ahmedabad's TPS mechanism allowed for the construction of about 80,000 dwelling units under various social housing schemes from 2007 onwards. These schemes are well distributed spatially in both AUDA and AMC areas contrary to the common practice in many parts of the world wherein such housing gets concentrated in the city's periphery. As indicated during primary consultations, beyond this the recent AHP projects have also been developed on these reserved affordable housing zones which has resulted in better occupancy because of its good location and availability of services and amenities.



Challenges/ Lessons learnt:

PMAY (U) recognised this requirement and formulated a mandatory reform for reservation of land for affordable housing under Master Plans. Gujarat has been focusing on this aspect through its TPS mechanism. Such reservation of land can resolve a challenge of land availability at the appropriate location, which has been one of the concerns leading to low occupancy of the houses under AHP component.

Replicability and Sustainability:

TPS brings planned and serviced land into the market which was previously reserved land. The scheme is implemented using new advanced technology making projects like these more viable for the future as well as different locations. The pilot on formulation of TPS for 25 cities under AMRUT scheme should also clearly highlight the reservation of land for affordable housing zone to replicate the Ahmedabad's TPS results across the country. These pilot under AMRUT shall be replicated for the sustainable urban development across all the cities.

Fact Sheet:

Thematic area	Affordable housing
First-year of the program	2002
Responsible institution	Gujarat State Government, Ahmedabad Urban Development Authority (AUDA), Ahmedabad Municipal Corporation (AMC).
Target audience	Socially and economically backward classes
Coverage	Gujarat State

Sources:

Ballaney, S., 2013, Supply of Land for Development: Land Readjustment Experience in Gujarat, India, Urban Legal Case Studies, UN-Habitat; Mahadevia, D., Pai, M., Mahendra, A., 2018, Ahmedabad: Town Planning Schemes for Equitable Development – Glass Half Full or Half Empty?, World Resources Report Case Study. Washington, DC: World Resources Institute; KII with State level functionary.

3. Successful delivery of ISSR projects in Gujarat

Summary:

Government of Gujarat, through its PPP Policy and Mukhyamantri Awas Yojana 2013 launched 'Gujarat Slum Rehabilitation Policy – PPP' in 2013, with the primary objective of making cities slum free. Subsequently, with the launch of PMAY (U), multiple projects were initiated in Gujarat under ISSR component. Through this policy intervention coupled with formal institutional development, State sought to achieve major changes within slum households by providing them with better access to facilities and legal ownership/ titles of their houses.

Objective:

To make cities of Gujarat slum free and provide improved housing and other services residing in the slums of the urban areas of the State.

Key Stakeholders:

- Government of Gujarat
- Municipal Corporations
- Urban Development Authorities
- District Authorities
- Town Planning Department
- Private Players/ builders
- NGOs

Implementation Strategy:

Gujarat is one of the leading States in implementing ISSR component across the country. Owing to the ideology of freeing cities from slums, many slums have been considered for ISSR after its proper due-diligence through the authorities constituted at State and city level. Under the State's policy, the decision making for the Slum Rehabilitation projects focused on decentralized approach. At City level, a Slum Rehabilitation Committee (SRC) is formed which examines the issues in a monthly meeting and communicates the decision taken to the State Government. The Committee has following members;

- Municipal Commissioner – Chairman
- District Collector – Member
- CEO of Urban Development Authority – Member
- Town Planning Officer of Urban Development Authority - Member
- Town Planning Officer of Municipal Corporation – Member
- Representative from NGO – Member
- Representative from Builders Association - Member

The project development process followed in the State is as follows:

- The Chief/ City Engineer of the Municipal Corporation along with other officials are responsible to develop the projects and present the same to the committee for their views. The suggestions and modifications if any are recorded and incorporated in the project.
- To develop the project following broad steps are carried out:
  - Slum identification: All the slums identified are categorised into three groups – Slums on Government land, Slums on Municipal Corporation and Slums on private land.
  - The due-diligence of the slum area is carried out by the Municipal Corporation based on the different slums identified. Further, based on the information like land value, number of slum households to be rehabilitated, the market potential of the land etc., the project is structured.
- Based on the developed project, Chief Engineer carries out the tender process and select the private player through a transparent process. The tender document is drafted so that it allows the bidder to quote the lump sum amount as the premium. It can be positive premium or negative premium based on the land value, slum dwellers to be rehabilitated, and market potential of the land.

For the successful implementation of ISSR projects and generate awareness amongst communities, various efforts were undertaken by the concerned authorities in the State:

- Timely visits to the areas and notified slums as and when required as per the convenience of the residents of the slums
- Continuous engagement with the community to resolve their issues and address their concerns and queries
- Providing knowledge of the policy and project to the communities
- Engaged NGO for the participation of the slum community and their smooth rehabilitation
- Consent of beneficiaries is a prerequisite for ISSR project. 70 per cent of the total slum dwellers' consent is required to execute the project. For this purpose, an affidavit is signed by the eligible beneficiaries providing their consent.

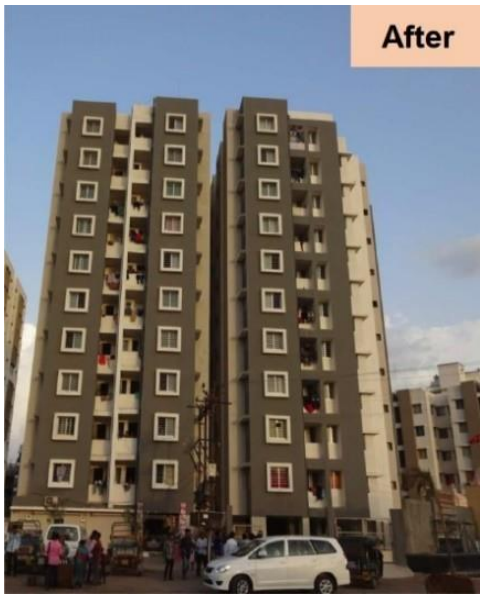
These processes and continuous participatory approach has helped the Gujarat State to initiate the ISSR projects across different cities. Some of the early projects In Rajkot were Bharatnagar 7A and 7B slum. It was carried out as a participatory exercise wherein slum dwellers opted for self-demolition of the houses and were provided Rs. 3,500/ month as rent to individual slum household for the project duration of 24 months. Bharat 7A Awas Yojana consists of 105 dwelling units and 7B Awas Yojana consists of 470 dwelling units. 2 BHK flats with all infrastructure amenities to the slum dwellers were provided. Further, slums across different plots in the vicinity were amalgamated resulting in freeing up of the land that Municipal corporation could use for additional supply of affordable housing.

Resource Utilisation:

Multiple institutions including State Government and local Government have contributed towards its implementation. Along with Central Government's support towards ISSR component, State Government as been able to bring in private players for investments in the projects.

Impact/ Outcomes:

- Across India, 13 ISSR projects have been completed till date, all in Gujarat, whereas projects in other States are in progress.
- Gujarat State has rehabilitated many slum dwellers and has received a positive premium of Rs. 200 crores.
- State has also been able to get land area worth multi-crores due to amalgamation of slums as one project. It is intended to use this positive premium corpus amount for cross-subsidising negative premium projects.



- As on date, since State has received only positive premium out of the ISSR projects, the subsidy amount under PMAY (U) has not been utilised. Under these projects, slum dwellers get the house at free of cost in addition to the rent for their transit accommodation.

Challenges/ Lessons learnt:

The success of the ISSR projects in Gujarat can be largely attributed to policy development for slum rehabilitation and its effective implementation. Along with this, specific measures were undertaken in relation to constitution of effective State level and city level institutional structure for slum rehabilitation, additional benefits of FSI at 3, free hold rights over the land left unutilised after rehabilitation of slums, exemption from applicable municipal and revenue charges etc. which have acted as success factors of the projects.

Replicability and Sustainability:

ISSR has been highly effective and successful in the State of Gujarat for slum redevelopment. Various factors and measures as mentioned earlier can be replicated and implemented in other States to address the problem of slow progress in case of ISSR projects.

Fact Sheet:

Thematic area	Slum redevelopment in the cities of Gujarat
First-year of the program	2013
Responsible institution	Government of Gujarat, Slum Rehabilitation Committee (SRC) at local level, Municipal Corporation
Target audience	Slum Dwellers
Coverage	Gujarat State

Sources:

MoHUA, 2018, 36th Central Sanctioning and Monitoring Committee (CSMC) - PMAY (U) – Government of Gujarat; Gujarat Slum Rehabilitation Policy – PPP – 2013 (Mukhya Mantri GRUH Yojana); PMAY (U) MIS Data as on 31st March, 2020; KII with State level functionary.

4. Pro-active efforts to create better access to housing loans for EWS

Summary:

EWS beneficiaries are not financially sound enough to pay their share upfront while purchasing a house. They face difficulty in availing loan from banks/HFCs due to multiple reasons such as limited knowledge, incomplete documentation etc. Thus, different stakeholders have undertaken measures to overcome this problem. Madhya Pradesh came up with a unique solution in the form of a Tripartite agreement among Banks/FIs. With the tripartite agreement the ULB acted as intermediary guarantor and allotted dwelling units as per eligibility criteria.

Objective:

To create better access to housing loans for EWS in the state of Madhya Pradesh by issuing a Model Tripartite agreement amongst the beneficiary, ULB and financial institution.

Key Stakeholders:

- Government of Madhya Pradesh
- Urban Local Bodies
- Banks/ Financial Institutions

Implementation Strategy:

Madhya Pradesh came up with a unique solution in the form of a Tripartite agreement among Banks/FIs, ULBs and beneficiaries to ensure timely loan linkages of EWS beneficiaries by issuing a Model Tripartite agreement. The key features of the tri-partite agreement to create conducive environment for all the parties are:

- ULBs act as intermediary guarantors for loan availed by EWS beneficiaries from banks/FIs.
- In case of default, the ULB takes possession of dwelling unit and allots it to next eligible beneficiary in waiting list who will pay the loan.
- Beneficiary contribution at the time of pre-allotment is 10 per cent of their share.
- ULB to bear the lump sum charges of Rs. 5,500 for stamp duty, registration charges, insurance, SARFAESI charges etc.

To support beneficiaries of PMAY (U) in availing loan by means of Tripartite agreement, site-camps were organized by ULBs to ensure effective implementation.

Resource Utilisation:

State Government effectively brought FIs on board to participate in this initiative and provide better access to housing finance. In terms of financial aspect, the following was considered:

- Maximum beneficiary share for EWS slum dwellers is Rs. 2 Lakh.

- In case of NPA, ULB empowered to cancel the allotment of existing beneficiary and re-allot the dwelling unit to a new beneficiary of the same category.
- The funding of the beneficiary share is proposed in 9:1 ratio wherein 90 per cent would be loan contribution and the remaining 10% would be beneficiary margin.
- In case ULB fails to make repayment, State shall deduct the amount from monthly Devolution Fund of ULBs and make repayment to Banks/FIs.

Impacts/ Outcomes:

- By linking banks/ FIs with beneficiaries through ULBs, it bridged financing gaps for the beneficiary.
- This also eased the risk faced by banks/FIs relating to foreclosure difficulties and resulted in high willingness to lend.
- Through implementation of Tripartite Agreement, 38,000 DUs were completed/ occupied by mid of year 2018.

Challenges/ Lessons learnt:

To maintain financial sustainability and support the EWS beneficiary, the pro-active efforts by the State has resulted in better access to housing finance and achieving the goal of housing occupancy.

Replicability and Sustainability:

This model can be replicated in other States to help EWS beneficiaries for AHP and ISSR component. Its application towards BLC beneficiaries can also be explored through discussions with SLBCs and ULBs.

Fact Sheet:

Thematic area	Better access to housing loans for EWS
First-year of the program	2018
Responsible institution	Government of Madhya Pradesh, Urban Local Bodies (ULB), Banks/ FIs
Target audience	EWS
Coverage	Madhya Pradesh State

Sources:

GoMP, 2018, 3rd Anniversary of PMAY (U) presentation; GoMP, 2017, PMAY (U) – National Workshop Presentation; GoMP, Model Tri-partite Agreement, UADD.

5. Printing and Issue of 'passbooks' for BLC – Awareness and transparency for beneficiaries

Summary:

The BLC component driven through self-construction is highly dependent on beneficiaries' actions and knowledge to able to avail the benefits under the Mission. National Government and State Governments have carried out multiple awareness activities but documenting the whole process for an individual and the Mission is imperative. Hence, Jharkhand State came out with an innovative practice of issuance of 'PassBooks' for BLC beneficiary, which can spread awareness and create a more accountable and transparent system.

Objective:

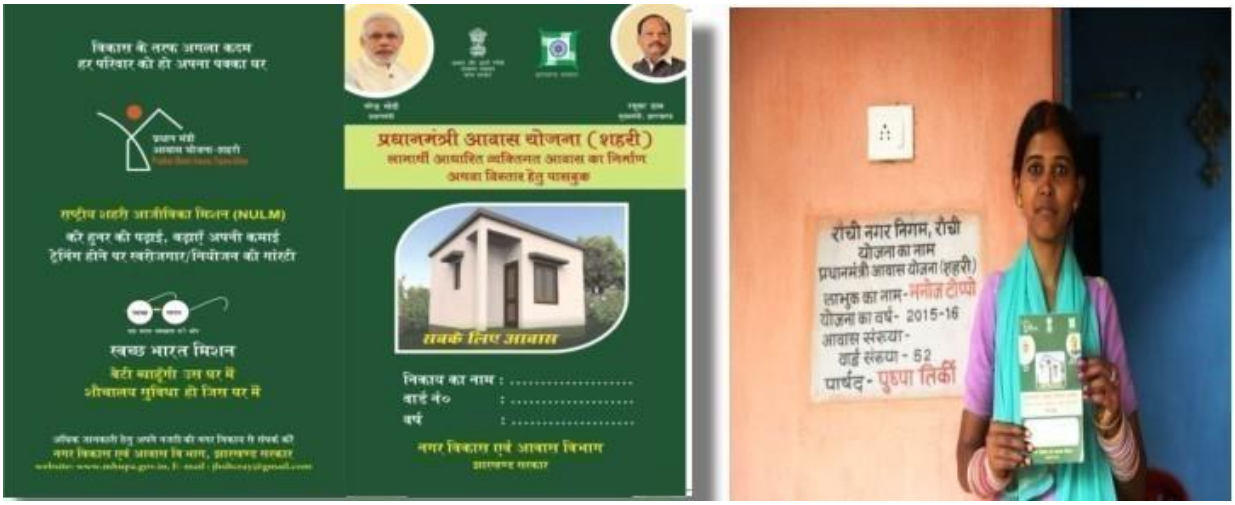
To spread awareness within the BLC beneficiaries and create transparency in the system with the practice of issuance of 'Passbooks' in the Jharkhand State.

Key Stakeholders:

- Government of Jharkhand
- Urban Development Department
- Beneficiaries

Implementation Strategy:

Jharkhand State conceptualised it in the year 2017 in view of various issues faced during implementation of previous schemes. The major issues faced were non-availability of any document with respect to the scheme with beneficiaries, lack of awareness amongst beneficiaries regarding their rights & responsibilities within the scheme, including awareness about timelines of construction and due instalments. This led to conceptualization of the idea of passbook by Jharkhand state, which would make both the Government agencies as well as beneficiaries accountable and responsible for the progress under PMAY (U). The passbook is given to the beneficiary in the form of a sole document related to the scheme which informs and educates the beneficiary that at which level of housing construction the Government assistance would be provided. It also provides information that the amount/ instalment that has been received against the construction of housing unit.



Resource utilisation:

The passbook was printed by State Government and provided to beneficiaries to create a transparent relationship between all the stakeholders. It keeps tracks of all the instalments and helps beneficiary to remain updated about the funding inflow.

Impact/ Outcomes:

Beneficiary Passbook was an innovative concept and MoHUA re-designed the passbook to make it generic for pan-India use by states/UTs. Passbook was printed by SLNA and is being issued to all the approved beneficiaries across all the ULBs covered under the scheme in the States.

Challenges/ Lessons Learnt:

Awareness amongst beneficiaries and continued communication helps in higher participation and creating more accountability and transparency across the systems.

Replicability and Sustainability:

Creating a transparent system along with spreading awareness among the beneficiary makes the system highly efficient. Such innovative ideas can also be adopted for other schemes across different Ministries which involves the subsidy disbursements in multiple instalments.

Fact Sheet:

Thematic area	Transparency and awareness for BLC beneficiaries
First-year of the program	2017
Responsible institution	Jharkhand State Government
Target audience	BLC beneficiaries
Coverage	Jharkhand State and then later on replicated in other States by GoI's direction

Source:

MoHUA, Stories of PMAY(U) beneficiaries and Best Practices of States; KIIs

6. Rani Mistri training in ULBs of Jharkhand – leading to women empowerment

Summary:

Rani Mistri is the unique movement which started from the Rural Development Department, Jharkhand, where these Mistris used to construct toilets in rural areas. It was taken forward by Urban Development Department, Jharkhand with the convergence of NULM and PMAY (U), resulting in trained Rani Mistris to get engaged in construction sector including PMAY (U) which reflected the identity and self-confidence of women empowerment.

Objective:

To empower women by training them to construct houses under the PMAY (U) and subsequently help them independently take up the work.

Key Stakeholders:

- Government of Jharkhand
- Urban Development Department, Jharkhand

Implementation Strategy:

- With the success of sanitation movement wherein a huge number of female beneficiaries/ SHG members/ female labours got training for toilet construction for making the ODF district, Rani Mistri term was accepted by the society and that gave motivation to the women. In this context, many of the Rani Mistris are motivated to work as mason in construction sector particularly in housing. Directorate of Municipal Administration has issued direction to all ULBs to facilitate and train interested female masons. Various ULBs of Jharkhand has started to train the Rani Mistri in convergence mode from NULM/ Skill Mission/ Civil Society like Mahila Housing Trust.
- District administration decided to create a pool of Rani Mistris in areas which faced shortage of trained masons. Training was conducted over four days, the first of which on theoretical orientation, while the remaining three days were dedicated to practical training amid the communities.

Resource utilisation:

Urban Development Department, Jharkhand with the convergence of NULM funding and PMAY (U) helped in training Rani Mistris.

Impact/ Outcomes:

- The State has trained more than 55,000 women to become toilet masons, along with the skills to extend their abilities to other building opportunities.
- PMAY (U) converged it with NULM and other social schemes and helped women getting trained as mason/ plumber/ electrical worker etc.
- Government of Jharkhand recognised the importance of 'Rani Mistri' and released a GO to train more women. Initially, only few women came forward to take training to construct houses. But gradually it was accepted by women and was considered as one of the important facets of their life, as it helped in improving their livelihood and building confidence. This has also helped to tackle the gender-based barriers in the community and overcome the social stigma attached to patriarchal norms.

Challenges/ Lessons learnt:

Convergence with other schemes, dissemination of the experiences of the women workers with others and clear indication of the potential opportunity for women has been some of the factors for achievement of this initiative.

Replicability and Sustainability:

This movement reflects the identity and self-confidence of women empowerment. Many women have undergone training as a mason along with skill to build other building opportunities. This has helped tackle the gender-based biases in the community. This initiative has helped in creating livelihood opportunities for women and has set an example for other States to address the need for formalisation of women construction workers and train them to bring them at par with their male counterparts in this industry.

Fact Sheet:

Thematic area	Training of women for house construction
First-year of the program	2018
Responsible institution	Government of Jharkhand
Target audience	Urban poor women
Coverage	Jharkhand State

Sources:

Government of Jharkhand, n.d., Harnessing Housing under BLC, Jharkhand – PMAY (U); https://swachhindia.ndtv.com/heres-what-vice-president-venkaiah-naidu-wants-india-learn-odf-jharkhands-women-masons-28855/

7. Bhudhaar and Bhu-Seva in Andhra Pradesh

Summary:

The Government of Andhra Pradesh (GoAP) launched AP BhuSeva in the State for digitisation of land records and to make land administration easier for the officials. GoAP commissioned Bhudhaar to every land parcel/ property, which is like unique id. BhuSeva with the Bhudhaar converts textual and spatial data of alnd from electronic to digital format. It is envisaged to help in land transactions, remove inefficiencies and avoid land disputes in the State. The vision of the project has been to establish a secure and scalable system integrated with IT infrastructure and process for efficient processes. This system leaps towards Digital India.

Objective:

To establish a transparent and full-proof land database by adopting the latest technology such as high-resolution satellite imagery, differentiated global positioning system (DGPS) and electronic total stations (ETS) for survey and mapping of land parcels. The objective is to have a 11 digit unique number 'Bhudhaar number' allotted to all the government, private, rural, urban and agricultural land parcels, with an online database of all the types of lands along with their owner details.

Key Stakeholders:

- Government of Andhra Pradesh
- BhuSeva Authority
- Panchayat Raj Department
- Urban Development Department and ULBs
- Town and Country Planning Department
- Revenue Department

Implementation Strategy:

Under this, GoAP assigns 11 digit unique id Bhudhaar to every land parcel/ property like unique id (Aadhaar) is given to all the residents. Latitude and longitude of every vertex of the land parcel under Bhudhaar enables locating a parcel/ property like fingerprint/ iris of person in case of Aadhaar. The broad steps followed are:

- The Bhudhaar number has been issued in two stages. It is a single software for all types of survey systems. Spatial data is integrated with non-spatial data.
- The land records consist of two types of data – Textual and Spatial data. Textual data has documents related to village/ city name, landowner's name, survey number, etc. Spatial Data has documents related to the plot, drawings of the plot, etc.

The focus has been to convert textual and spatial data of land fromm electronic form to digital form through Bhu-Seva by providing services under BhuSeva portal and Bhudhaar card with QR code for easy transaction process.

All the departments dealing with land records have participated in Bhuseva including Revenue, Panchayat Raj, Municipal Administration, Registration, Survey and Settlement, Forest, Endowments and Waqf and they are integrating their services related to land under the BhuSeva Project.

For administration purposes, an inter-departmental committee named as BhuSeva Authority was formulated to implement and monitor the progress of the project. The project is being regularly monitored by AP CM Dashboard which was developed and managed by Real Time Governance Society (RTGS) in real time basis.

Resource utilisation:

- The BhuSeva has been focused to convert textual and spatial data of land from electronic form to digital form by providing services under BhuSeva portal and Bhudhaar card with QR code for easy transaction process.
- The BhuSeva project was provided with a budget of Rs. 26.75 Cr.

Impact/ Outcomes:

By early 2019, it was able to achieve good numbers against its targets. The assignment of Bhudhaar to agriculture land parcels, urban and rural properties were as follows:

Category of land	Assignment of Bhudhaar
Agriculture land parcels	2 crore out of 2.39 crore (83%)
Houses and vacant site in urban	0.05 crore out of 0.32 crore (14%)
Houses and vacant sites in rural	0.53 crore out of 3.55 crore (63%)
Total	2.58 crore out of 3.55 crore (73%)

- This project has enabled the departments and agencies in the state to serve the citizens better with transparency and equitably. It has numerous benefits:
- It has created a single platform of data for public to gather information on land parcels. The land records are available with a click of button making it easier for the users to have details of their land on their phones and paperless and this has helped in curbing fraudulent transactions through enhanced security features.
- e-bhudhaar targets to help people to avail loans and subsidy by just scanning QR code and completing the transactions.

Challenges/ Lessons Learnt:

Bhudhaar and Bhuseva together provide transparency in the land record systems with easier process for Government and people. It provides easy and real-time access to people in relation to their land records.

Replicability and Sustainability:

This initiative has enabled the departments and agencies in the state to serve the citizens better. It has created a single platform of data for public to gather information on land parcels and create a more accountable and transparent system. Such an innovative concept can be explored, researched and developed in other States to overcome the land records challenges faced in urban areas.

Fact Sheet:

Thematic area	Online platform for land records and transactions
First-year of the program	2018
Responsible institution	Government of Andhra Pradesh and BhuSeva Authority
Target audience	State's urban and rural population
Coverage	Andhra Pradesh State

Sources:

Government of Andhra Pradesh (Real Time Governance Society),n.d; https://indianexpress.com/article/india/andhra-pradesh-launches-bhudaar-portal-to-make-land-records-easily-available-to-people-5455498/

8. Convergence of Schemes – 'LIFE Mission' (Livelihood, Inclusion and Financial Empowerment)

Summary:

LIFE Mission was launched in 2016 by the Government of Kerala (GoK) to comprehensively provide housing to the landless and homeless people in the State along with provision for pursuing their livelihoods, converging social services including Primary Health Care, Geriatric Supports, Skill Development and provision for financial services inclusion. PMAY (U) has been converged with LIFE Mission and unit cost under BLC new component has been enhanced from Rs. 1.5 lakh to Rs. 4 lakh and additional assistance is provided under the LIFE Mission.

Objective:

LIFE Mission is launched to provide housing to the landless and homeless people in the state of Kerala, along with the provision for livelihood activities, social services and provision for inclusion of financial services.

Key Stakeholders:

- Government of Kerala
- Urban Local Bodies
- NGOs and other private entities

Implementation strategy:

- GoK modelled this Mission, a multi-faceted convergence model under three different stages:
  - Completion of unfinished houses already designed under the previous schemes
  - Building of 400 sq. ft. houses under the budget of Rs. 4 lakh on the beneficiaries land
  - Building flats for landless beneficiaries
- Under stage 1, Mission provided additional funding to the beneficiaries who could not complete their houses due to limited financial assistance.
- Stage 2 focused on construction of houses for those who had land but not the resources to build a house. Under this, funds available under the PMAY (U) scheme of GoI, as well as the housing schemes under SC-ST and Fisheries departments were included, which was supplemented by GoK's funding assistance.
- LIFE Mission along with focused approach towards housing provisioning, focused on provisioning of many other benefits. Convergence with flagship programmes, schemes of State Government, ULBs, NGOs and corporates are integrated to ensure comprehensive development of PMAY beneficiaries.
- GoK conducted 'joint adalats' at many places to make available the basic needs of the beneficiaries, such as ration cards, voter ID cards, Aadhaar cards, land ownership documents etc.
- This Mission also offers livelihood training to at least one member of the beneficiary families, and secure future along with current needs. Through the convergence with 'Ayyankali Urban Employment Guarantee Scheme (AUEGS), 90 man-days are provided to PMAY (U) beneficiaries to provide additional financial assistance of Rs. 24,390/ beneficiary. Beside this, additional financial resources for the construction of the houses through provision of building materials at the concessional rates and so on.
- Further, to achieve the above goals, the GoK has also undertaken other activities in convergence with 'Kudumbashree' which included Life survey and data entry for beneficiary selection to ensure inclusion of all eligible beneficiaries.
  - Handholding for completion of unfinished homes and support in interventions like bulk procurement geared by the 'Kudumbashree' network.
  - Mission as part of empowering women in self-employment, identified construction as a potential area for meeting the desired objectives and constituted 'All Women Construction Groups'. Currently 50 units consisting of 496 members are functioning across various ULBs in the state. These groups also supported the Mission in development of cement bricks needed for houses through cement brick units of 'Kudumbashree'.
  - As part of construction activity, kudumbashree has formed 45 cement brick units across the state. These members will be engaged with the construction of cement bricks for the construction of LIFE houses in convergence with MGNREGA.

Resource Utilisation:

LIFE Mission has converged funding from PMAY (U) along with other funding from State for the housing to enhance the the overall subsidy to up to Rs. 4 lakh. Further, it converges with Ayyankali Urban Employment Guarantee Scheme (AUEGS) to help beneficiaries in sustaining the construction activity. Government of Kerala has been actively utilising its funding and human resources to implement the Mission.

Impacts/ Outcomes:

LIFE Mission launched this to provide safe housing to nearly 4.3 lakh homeless/ landless people in the State within a period of five years. Under this Mission, around 2.15 lakh houses have been completed and it is estimated that a total of 10 lakh people have been benefitted from the Mission. The convergence of PMAY (U) with Kudumbashree and NULM has made a significant impact on construction workers and the end beneficiaries.

Challenges/ Lessons Learnt: Life Mission provides homes, livelihood, facilities including education and health, treatment of the sick, palliative care, wage-guarantee adding to the faster construction for people coming from different strata of society and highlights the importance of convergence of social interventions with housing need.

Replicability and Sustainability:

This mission provides housing to the landless and homeless people along with provision for pursuing their livelihoods, converging social services including Primary Health Care, Geriatric Supports, Skill Development and provision for financial services inclusion. Such missions can be carried out in various states with meticulous planning and systematic procedure.

Fact Sheet:

Thematic area	Provide housing and other facilities to homeless and landless people
First-year of the program	2016
Responsible institution	Government of Kerala, Urban Local Bodies, NGOs and private players
Target audience	Homeless and Landless people
Coverage	Kerala State

Sources: https://frontline.thehindu.com/dispatches/article30972353.ece; http://www.kudumbashree.org/

9. 'Odisha Liveable Habitat Mission' – 'JAGA Mission' – A case study of convergence

Summary:

Govt. of Odisha has taken up various initiatives to provide proper housing to the numerous slum dwellers in the State and the 'JAGA' mission initiatives is one of them. Odisha Liveable Habitat Mission 'JAGA' is a society under H&UD department, Govt. of Odisha and the mission aims at transforming the slums into liveable habitat with all necessary civic infrastructure and services at par with the better off areas within the same urban local body (ULB) and to continuously improve the standard of the infrastructure and services and access to livelihood opportunities. State has played a facilitative role with the involvement of technical agencies, NGOs/ CBOs and many field facilitators for the implementation of the Mission. Over a million slum dwellers have been covered under the mission in all the ULBs of the state.

Objective:

JAGA Mission aims at transforming the slums into liveable habitat with all necessary civic infrastructure and services.

Key Stakeholders:

- Government of Odisha
- Housing and Urban Development Department, Odisha
- NGOS/ CBOs
- Technical Agencies – Private and Government
- Financial Institutions
- Communities

Implementation Strategy:

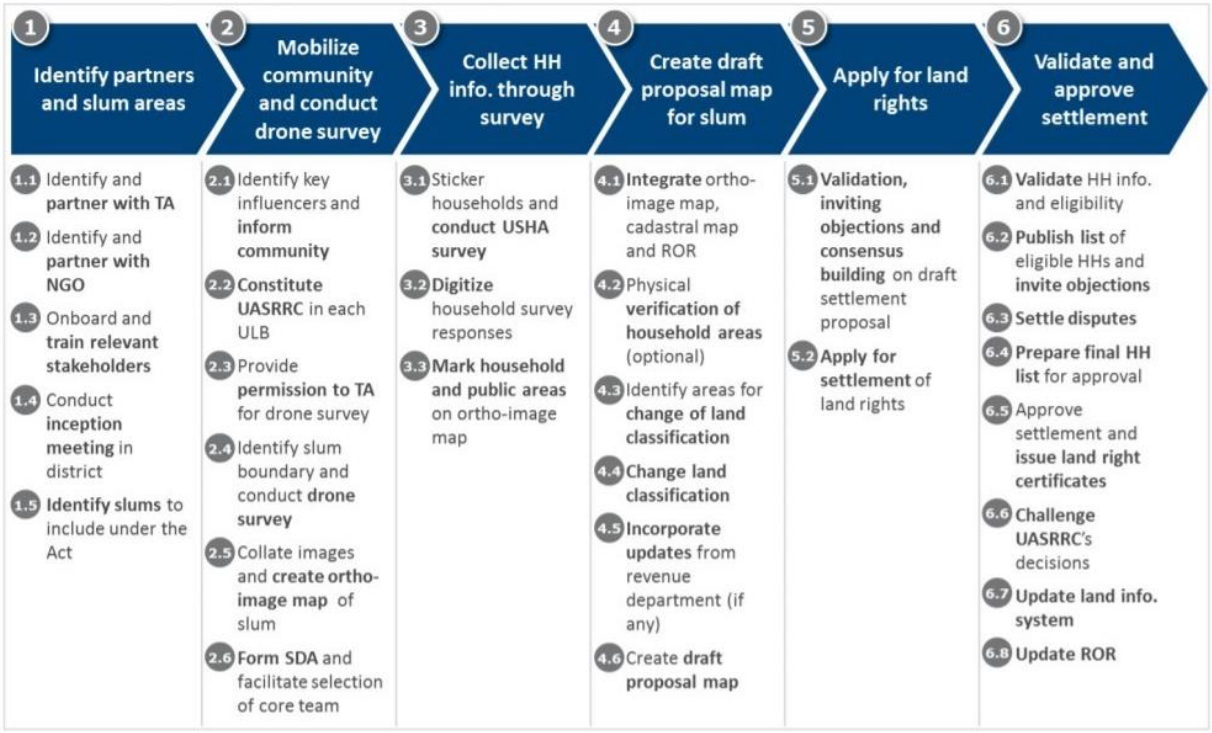
The Mission is implemented across all the ULBs of the State. It aims at leveraging and converging various schemes/ programs/ funding opportunities by strengthening collaboration among various Departments, urban bodies, non-government organisations, financial institutions, international agencies, trusts, communities and other stakeholders.

To transform slums into Liveable Habitats, following components under 'JAGA' Mission have been identified:

To tackle the issue of land rights, State introduced the 'Odisha Land Rights to Slum Dwellers Act, 2017', that empowers the slum dwellers. The broad provisions of the Act are:

- Granting in-situ land rights in tenable slums and development of new habitats for untenable slums
- Land Right is:
  - Heritable but not transferable
  - Only for residential and residential cum livelihood purpose
  - Mortgage allowed for housing loan
- For EWS household:
  - Up to 30 sq. m. land – free of cost
  - Excess of 30 sq. m land – 25 per cent of benchmark value of land
- For other households:
  - 50 per cent cost linked to benchmark value of land
- Creation of Urban Poor Welfare Fund (statutory) – for slum infrastructure creation

The process flow for identifying the slums, stakeholders and land rights followed under JAGA Mission allocation is as follows:



Resource utilisation:

State has played a facilitative role with the involvement of three technical agencies, 26 NGOs/ CBOs and more than 600 field facilitators. The inclusion of a range of organisations has enabled this initiative to build on extensive knowledge and experience of different partners and to ensure a community-centric approach. These technical agencies extensively worked on drone mapping of slum areas, GIS mapping and creation of household database to amp the areas and identify the slum boundaries. These technical agencies were supported by NGO partners which carried out the community mobilisation process by conducting Urban Slum Household (USHA) survey. These agencies were extensively supported by 'Tehsil offices' for validation of maps, ownership and classification of land.

To create a consultative process and pace-up the implementation at the field, Urban Area Slum Redevelopment and Rehabilitation Committee (UASRRC) has been formulated, which has multiple members including district collector, councillor, Tehsildar, Urban Planner, Superintendent of Police, representative from NGO and representative from Slum Dwellers Association (SDA). Further, to lay down the foundation for long-term community empowerment, SDAs in each area has been developed. This entire process ensures local ownership and during this process, women and community leaders were encouraged to play a lead role.

The Mission has been funded by State budgets, existing budgets of State and Centre earmarked for other schemes through convergence, and additional funding from Tata Trust. Tata Trust also supported the engagement of about 100 fellows (known as Jaga fellowship) to support the implementation. Norman Foster Foundation also signed a MoU with Tata Trusts to support development of a design and masterplan for in-situ and new habitat slum upgrades based on the vision of community. Further, Act also incorporated a unique feature, wherein the residents were not required to visit any Government office at any time to avoid any hassle for the slum dwellers.

Impact/ Outcomes:

- Approximately, more than a million slum dwellers have been covered under the Mission in all the ULBs of the State. 1194 slums have been captured under five municipal corporations and in addition 1886 slums have been covered across 109 ULBs (small and medium towns). Further, a total of 51,041 households have been granted with land right certificates.
- It is claimed to be world's largest slum titling and upgrading projects, which is being implemented quickly at scale. High resolution maps have been prepared for all the slums in small and medium

towns, making Odisha the only State to have detailed maps of all its slum settlements. This has helped in taking action steps simultaneously across the State.

- Under JAGA mission, major impacts across different areas have been witnessed. Land right act provides tenure security to the slum dwellers against constant threat of eviction and created a legal right along with proper address of slum dwellers. Further, recognition of land rights allows for cleaner cities and better living conditions of slum dwellers. The project ensured that women are given equal rights through joint ownership. The project has successfully combined community participation with the use of modern technologies (mapping images, drone surveys, detailed HH surveys) - this has led to zero disputes and zero litigation to date
- World Habitat Mission has recognised the Odisha state government JAGA Mission and won ***World Habitat Award*** for its ambitious initiative***.*** Further project was also won the ***India Geospatial Excellence Award.***

Challenges/ Lessons learnt:

There have been multiple factors that have helped Mission in successfully achieving its objectives and meet the outcomes. These success factors are:

- Scientific-participatory-transparent process - this resulted in zero dispute and zero litigation
- Holistic development of slums-through JAGA Mission: In-situ or New Habitat
- Convergence with ongoing schemes of State and Central Government
- Adoption of innovative technology for planning and public participation
- Strong leadership and development of robust institutional framework (top-down and bottom-up approach)
- Greater co-ordination between the local ULB and the State revenue department – to understand land use, ownership etc.
- Networking and knowledge partners involvement

Replicability and Sustainability:

With growing urbanisation, it is important to provide for better living standards and overcome the slum challenge. JAGA Mission has kick started the redevelopment/ upgradation of the slums that can be replicated across the entire nation.

Fact Sheet:

Thematic area	Slum Transformation and provision of proper housing to slum dwellers
First-year of the program	2018
Responsible institution	Odisha State Government, H&UD Department, NGOs, Technical Agencies, Financial Institutions, Communities
Target audience	Slum Dwellers
Coverage	Odisha State

Source: *http://www.jagamission.org/about-us.html; Bridgespan Group and Omidyar Network, (n.d.), Odisha: Land Rights to Slum Dwellers; Government of Odisha, H&UDD, (n.d.), Odisha Liveable Habitat Mission – "JAGA" – Memorandum & Bye-Laws of the Society.*

10. Affordable Housing in Partnership through PPP

Summary:

Government of Uttar Pradesh launched 'Affordable Housing in Partnership Yojana (2018-21)' to create conducive environment for private players and attract them to participate in these projects to deliver affordable housing. As per the scheme, the private developer is responsible for providing land and carrying out construction of the project. The project with EWS houses after completion is to be handed over to the state government for the disposal to beneficiaries.

Objective:

To create affordable housing through public private partnership and to create a conducive environment for private players and attract them to participate in these projects.

Key Stakeholders:

- Government of Uttar Pradesh
- Private player/ developers

Implementation Strategy:

The policy provides incentives in addition to PMAY (U). The policy also defines the roles of different stakeholders and highlights the conditions and benefits for the private players and beneficiaries. As per the scheme, private developer is responsible for providing land and carrying out construction of the project. Broadly, the conditions defined for the private player to participate under this process is as follows:

- Developer to surrender 20 per cent of land under sale component as performance guarantee, to be released once EWS houses are constructed and handed over
- Construction of EWS and other units may be allowed on separate land parcels if total number of houses constructed is more than 250.
- Distance between land parcels has to be within 5km in 1 million plus cities, 3-5 km in 0.5-1 million and within 2km in cities with population less than 0.5 million.
- EWS houses handed over to State Govt for disposal to beneficiaries, and sale of other properties remains with developer
- EWS house to be completed in 24 months, otherwise penalty is charged

The benefits to the developer as per the scheme are:

- Subsidy of Rs. 2.5 lakh per EWS house from Government (Rs. 1.5 lakh as central assistance and Rs. 1 lakh as State subsidy)
- Discount of 25-50 per cent on External Development Charges
- Speedy land use conversion allowed within 46 days
- FAR 2.5, TDR of 1.0 on base FAR for Cross subsidisation of project cost
- 10 per cent of FAR allowed for commercial development
- No height restrictions
- Exemption on payment of Stamp duty, land use conversion
- Faster approvals through Online Building Planning Permission System

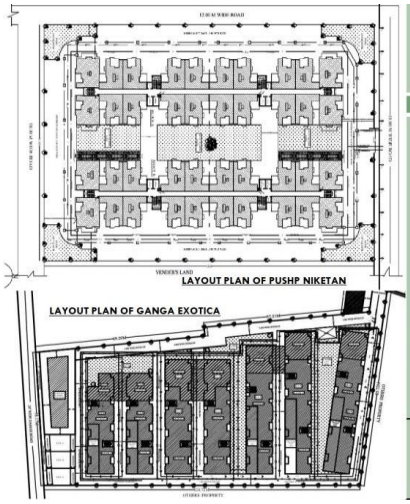
Resource utilisation:

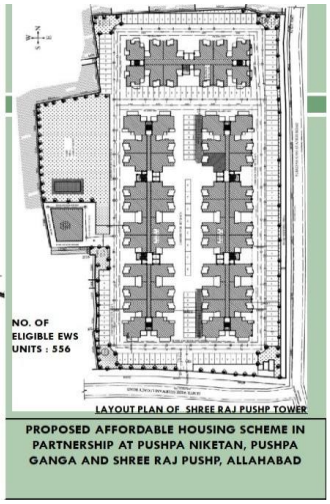
Over and above Central Government's financial assistance, State Government also provides for the funding, with the total subsidy of Rs. 2.5 lakh per EWS house. Along with this, State Government provides for many other fiscal and non-fiscal incentives to promote participation.

Impact/ Outcomes:

Various private developers have come forward to build AHP projects in Uttar Pradesh post the launch of this policy. One of such projects is construction of houses at three land parcels at Allahabad by developer – M/s Goel Housing Construction Company. The developer was able to develop the project:

- Utilised three land parcels
- Construction of 556 EWS houses under PMAU (U) at one site using FAR of 2.5
- Construction of premium 2 and 3 BHK units on other two sites availing benefits of TDR in addition to existing FAR as sale component





Challenges/ Lessons Learnt:

Right set of incentives with clear distribution of roles and responsibilities along with risks helps in forming a strong PPP structure and attract private players to develop projects including EWS houses.

Replicability and Sustainability:

Such specific measures and incentives can be replicated across other States to boost PPP project development in affordable housing.

Fact Sheet:

Thematic area	Affordable housing in partnership through PPP
First-year of the program	2018
Responsible institution	Uttar Pradesh State Government, Private Developers
Target audience	EWS
Coverage	Uttar Pradesh State

Source: *38th CSMC Presentation – PMAY (U), Uttar Pradesh; Notification 1132/8-1-18-106/2018 – AHP (2018-21) dated 12 July, 2018*

E. Swachh Bharat Mission – Urban

1. Holistic approach for improved sanitation in Warangal

Summary:

Warangal is the second-largest city in the state of Telangana with a population of over 8 lakh people (Office of the Registrar General & Census Commissioner, India, 2011). In 2015, 30 per cent of the city's population was reported to practice open defecation (OD) due to the lack of adequate IHHL, CT and PT. The city did not have any underground sewerage system and depended entirely on onsite sanitation systems (OSS) and there was no monitoring mechanism for emptying and disposal of Faecal Sludge (FS) collected from containment units. The innovative technologies and holistic approach adopted by the Greater Warangal Municipal Corporation (GWMC) in 2016 has been key in achieving and sustaining 100% ODF status and will be a benchmark in reaching the ODF+/++ status.

Objectives:

- To adopt a holistic approach combined with innovative technologies to improve sanitation services.
- To engage with government on ground data and involve the private sector for innovative technologies to improve sanitation services (India Sanitation Coalition, 2011).

Key Stakeholders:

- Greater Warangal Municipal Corporation (GWMC)
- Administrative Staff College of India (ASCI)
- Bill & Melinda Gates Foundation
- UK Department for International Development (DfID)
- Citizens of Warangal

Implementation strategy:

- Septage Management Guideline and institutionalising FSSM**:** GWMC with support from Administrative Staff College of India (ASCI) developed the Septage Management - Regulations in 2016. It was the first city in the country to implement septage management regulation across the sanitation service chain for effective FSSM. The regulation entails guidelines for construction of septic tanks, conversion of insanitary toilets to sanitary toilets, septic tank desludging, transportation and treatment of septage etc. GWMC also formed a Non-Sewer Sanitation (NSS) cell within the municipality to plan, design and monitor sanitation-related interventions in the city (ASCI, 2016).
- Mechanised Desludging**:** Desludging activity in Warangal is carried out by private desludging operators as the ULB does not own any desludging vehicle of its own. To regulate 100 per cent mechanised desludging, and safe disposal of faecal sludge, GWMC enforced a standard license agreement for private desludging operators and uses a GPS-based monitoring system (FSM Tracker) to track their live location. Additionally, a sanitation helpline known as S-line was established as a call centre for desludging requests and for sanitation-related complaints and redressal (regarding prevalence of insanitary situation around the house).
- Public Private Partnership (PPP) for Faecal Sludge Treatment Plants (FSTPs)**:** In 2017, a pilot 15 KLD FSTP based on pyrolysis was constructed on a PPP model. While GWMC provided land for the construction of the FSTP, BMGF funded the CapEx. Private partner Tide Technocrats is responsible for the O&M of the FSTP. Another 10 KLD FSTP was constructed under the Corporate Social Responsibility (CSR) initiative of *Banka Bioloo*. Moreover, all the public toilets (PTs) in Warangal are managed by private players via PPP model and GWMC collects citizen feedback on PT through punching machines with 1-5-star ratings. PT monitoring app maintained by municipality is used for weekly monitoring. The PPP has played a major role in ensuring investment, effective resource management and providing sustainability (ASCI, 2016).
- SHE Toilets: GWMC constructed SHE toilets specifically designed only for women. It started off as a pilot project in Warangal in the year 2017. It has now become a major policy measure and a document has been released for the entire state of Telangana (Reddy P. L., 2019).

Resource Utilization:

In the year 2017, ASCI set up a small Technical Services Unit (TSU) for implementing "City Wide Delivery of Sustainable and Equitable Sanitation Services in Warangal" with the support of the Bill and Melinda Gates Foundation (BMGF) and the UK Department for International Development (DfID). As part of the SBM, the focus of the TSU was to primarily aid the city on Individual Household Latrine implementation. Under the same project, a state level Project Management Unit (PMU) and city level Project Implementation Unit (PIU) were also set up within GWMC. A non-sewer sanitation (NSS) cell was established in 2018 at the state-level to manage and operationalise NSS in 72 cities. Additionally, a City Sanitation Task Force comprising multiple stakeholders including civil society groups was established for dialogue and participation by the GWMC (WaterAid, 2019).

Impact/ Outcomes:

- After the successful implementation of SHE toilet in Warangal in 2017, it has become a major policy measure and a government order has been shared to scale up the same in the state of Telangana. Other cities like Trichy, Delhi, and Chennai etc. have also replicated the SHE toilet model.
- The city has committed to scaling up the faecal sludge treatment plants to a capacity of 150 kilolitres/day; the land for which has already been identified by GWMC (WaterAid, 2019).

Challenges/ Lessons Learnt:

- The holistic approach adopted at the municipal level is key in achieving improved sanitation scenario in Warangal. This includes the construction of FSTs via PPP model, ensuring the use of Personal Protection Equipment (PPE) by sanitation workers, construction of SHE toilets and institutionalising FSSM (ASCI, 2016).

Replicability & Sustainability:

- The PPP based approach for managing the FSTPs has been scaled up and used in 76 towns in Andhra Pradesh, and in towns like Chunar in Uttar Pradesh and Wai in Maharashtra. The systems, processes and tools introduced in Warangal are replicable and scalable, and as a result, professionals from across India and the world have visited Warangal to learn more about them.
- The holistic approach for improved sanitation has informed several state level policies and directives that contribute to an enabling environment for FSM throughout the state of Telangana and other states as well.

Source: (Reddy P. L., 2019).

Fact Sheet:

Thematic area	City wide sanitation planning
First-year of the program	2016
Responsible institution	Greater Warangal Municipal Corporation (GWMC) and Administrative Staff College of India (ASCI)
Target audience	Citizens of Warangal
Coverage	Warangal, Telangana

2. Shit flow Diagram: A decision support tool in City Sanitation Planning

Summary:

Faecal sludge management (FSM) represents a growing challenge, generating significant negative public health and environmental risks in poor and rapidly growing cities (Hawkins, Blackett, & Heymans, 2014). The faecal waste needs to be safely managed along the citywide sanitation chain. The safe management of the human waste is crucial in improving the sanitation services in any given city irrespective of the population variance.

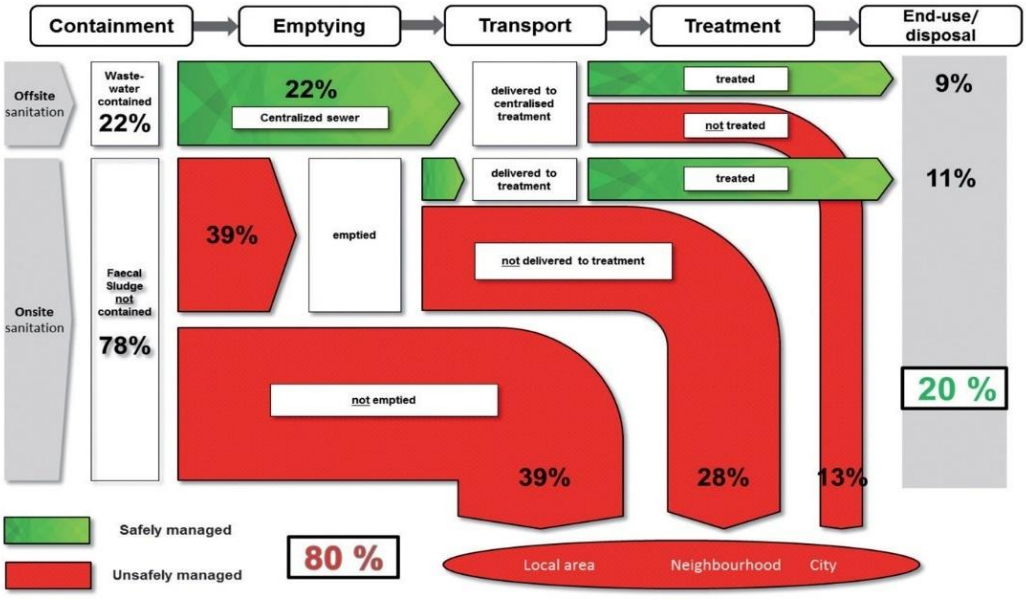
A Shit Flow Diagram, also referred as 'SFD' is a visualisation tool which can be instrumental in understanding and communicating how faecal waste (both faecal sludge and wastewater) flows along the sanitation service chain in the city (Hawkins, Blackett, & Heymans, 2014). SFDs help map where the shit is going after it is flushed out. National level KIIs emphasised the use of SFD as a prerequisite tool to achieve holistic city sanitation planning to look beyond the asset creation of toilets.

"Every city should prepare a shit flow diagram which maps the issue on-site and off-site and prepare a citywide sanitation plan. This means that small or low-income settlements are taken care (of). Citywide sanitation planning was not there before, it was only for assets." – National Level KII.

Objectives of SFD:

The proportion of faecal waste that is effectively managed continues as a green arrow, while any proportion getting ineffectively managed comes out as red arrow as shown in the figure below. The SFD maps the following stages in the urban sanitation chain:

- Containment: SFD identifies the various sanitation options according to where the waste goes, like sewer, on-site containment, off-site sanitation and open defecation, as containment systems in households.
- Emptying: Desludging services are categorised under emptying. Vacuum tankers or suction machineries are commonly used emptying services. Air leakage during suction from the hose pipe due to lack of proper maintenance and non-availability of spare parts of suction machine is a major challenge in emptying.
- Transportation: In this stage, the Faecal Sludge collected from the various containment systems is transported for treatment to the outskirts of the city or town.
- Treatment and Disposal: This is the final stage where the Faecal Sludge is treated and disposed (Centre for Science and Environment , 2017)



Source: (SFD Promotion Initiative, 2016)

Key Stakeholders:

- SFD Promotion Initiative
- Sustainable Sanitation Alliance (SuSanA) under Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
- Center for Science and Environment
- Bill & Melinda Gates Foundation
- Government decision-makers
- Development organisations
- Service providers/utilities
- City/Municipal authorities

Implementation strategy:

- The SFD Promotion Initiative has developed a methodology and tools to enable the easy production of standardized SFDs by city stakeholders, development agencies and non-governmental organizations.
- The SFD graphic generator is a quick and simple tool that allows the production of SFD graphics in three steps. One can generate the SFD graphic and download the results for reports and publications with the data available for the city (SFD Promotion Initiative, 2016).
- SFDs prepare different scenarios by highlighting issues in current sanitation system to help the authorities consider alternatives to large and expensive sewers which would serve only a handful of better-off residents.
- SFDs measure current progress and help improvements take off, following the enactment of a national policy on faecal sludge management.
- SFDs link international companies to their local counterparts to understand the effectiveness of current sanitation situation (Kaupp, 2019).

Resource Utilization:

From 2014 to 2018 the SFD Promotion Initiative has been managed by GIZ under the umbrella of the Sustainable Sanitation Alliance (SuSanA), supported by the Bill & Melinda Gates Foundation through two grants (2014-2015 and 2016-2018). Phase III of the SFD Promotion Initiative is being managed by the University of Leeds and the Center for Science and Environment, supported by the Bill & Melinda Gates Foundation through two additional grants. The secretariat of the SFD Web portal and Helpdesk are remaining with GIZ as part of the SuSanA secretariat (SFD Promotion Initiative, 2016).

Impact/ Outcomes:

- SFD can visualize a city's sanitation challenges to inform city-wide sanitation planning.
- SFD represents where faecal waste goes, what proportion is managed and where the unmanaged portion ends up (Hawkins, Blackett, & Heymans, 2014).
- SFD visualizes how faecal waste (both faecal sludge and wastewater) flows along the sanitation service chain at the municipal level.

Challenges/ Lessons Learnt:

- A shit flow diagram is an effective tool to understand and interpret the urban sanitation service chain, but it can be an intimidating one to produce.
- SFD has the potential to serve as a decision support tool to improve the existing urban faecal sludge management services by engaging government decision-makers, development organisations, service providers/utilities, and city/municipal authorities in the process.

Replicability & Sustainability:

There are SFD Manuals prepared by SFD Promotion Initiative which describes the process followed to produce SFD graphics and reports. SFD manuals can guide on data collection and analysis on how to use the SFD graphic generator. along with the definitions of terms and variables. This can be utilised to generate SFD for any desired city.

Fact Sheet:

Thematic area	City wide sanitation planning
First-year of the program	2014
Responsible institution	SFD Promotion Initiative and City stakeholders
Target audience	Service providers/utilities and City/Municipal Authorities
Coverage	International and National Cities

3. City-Wide Inclusive Sanitation Service Assessment and Planning tool (CWIS-SAP)

Summary:

The Citywide Inclusive Sanitation Services Assessment and Planning (CWIS SAP) tool is a Web Based tool that helps decision makers compare the outcomes of different sanitation interventions or investments. The tool analyses and illustrates how each proposed intervention is likely to affect the equity, financial sustainability, and safety of sanitation services in each urban area. To deliver safe and equitable sanitation services using limited resources, cities need information about the types of interventions that will have the highest impact while ensuring low-income areas are not left behind avoid negatively impacting service providers' financial viability and increase the amount of waste that will be disposed of safely (Bill and Melinda Gates Foundation, 2019).

Objectives:

- To help decision makers compare the outcomes of different sanitation interventions and investments.
- To assess business plans and tariff proposals to ensure that planned resource allocation is in line with policy objectives.
- To mobilize resources in support of inclusive sanitation interventions.
- To analyse and identify interventions that cost-effectively promote universal access to safely managed sanitation.

Key Stakeholders:

- Eastern and Southern Africa Water
- Athena Infonomics
- Sanitation Regulators Association (ESAWAS)
- Aguaconsult
- Bill & Melinda Gates Foundation
- Sanitation service providers
- Ministries responsible for sanitation Regulators
- City governments
- Development finance institutions
- Consultants
- Researchers

Implementation strategy:

- The tool is built around four key stages: input, financial models, aggregation, and results.
- The tool starts with a mapping of current city-level sanitation coverage and the costs to provide services, revenues and safety levels associated with each of the sanitation systems in use.
- It then allows the user to model up to three scenarios that consider changes to hardware, alternative revenue and service delivery models, or any mix of those interventions and compare how these will affect key city level outcomes.
- The tool presents the results of the calculations on the CWIS SAP dashboard. The dashboard provides users with a means of visualizing how each scenario affects the equity, safety and sustainability of sanitation services in the modelled urban area (Bill and Melinda Gates Foundation, 2019).
- The CWIS SAP project team has collaborated with national regulators and sanitation authorities to develop the tool and test it in Lusaka (Zambia), Nakuru (Kenya), and Khulna (Bangladesh).
- A second round of testing is ongoing in Dar es Salaam (Tanzania), Kampala (Uganda), and Trichy (India).

Resource Utilization:

The CWIS SAP project is implemented by Athena Infonomics, the Eastern and Southern Africa Water and Sanitation Regulators Association (ESAWAS), and Aguaconsult with support from the Bill & Melinda Gates Foundation (Bill and Melinda Gates Foundation, 2020).

Impact/Outcomes:

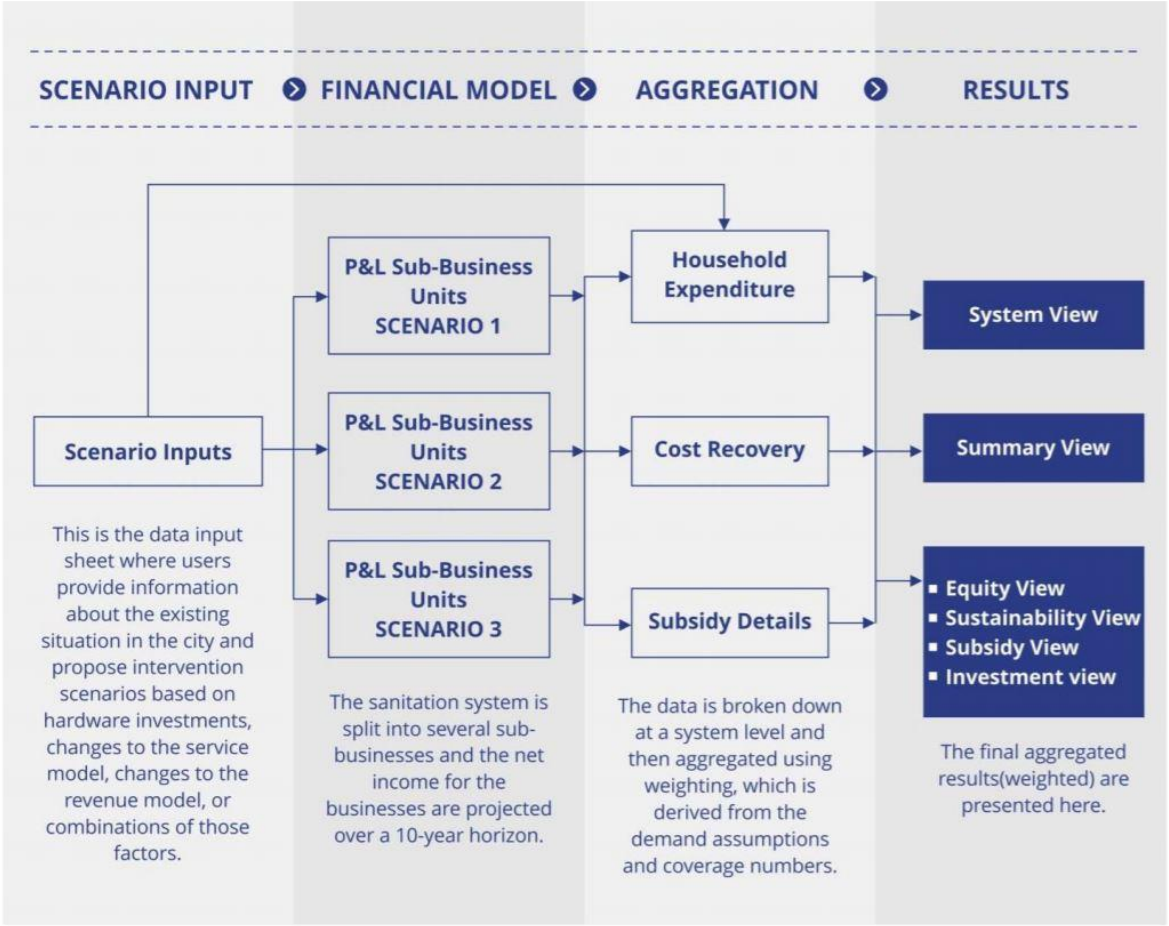
- In Lusaka, Zambia, the tool has helped the Lusaka Water Supply and Sanitation Company re-evaluate large-scale investments that were projected to generate losses for the utility while extending access to a relatively small share of the population.
- The utility and regulatory agency are now exploring alternative models that place a greater emphasis on safe and affordable onsite services delivered through a combination of regulation, subsidies, and private sector engagement.

Challenges/ Lessons Learnt:

- The tool seeks to help city authorities design better-informed sanitation interventions.
- The tool allows for comparison of multiple interventions to aid service providers' decisions about what to prioritize, considering both public needs and the service provider's financial sustainability
- The tool analyzes and illustrates the outcomes of possible interventions – including investments, but also changes to pricing and regulation – and provides decision-makers with a means of systematically evaluating their options and identifying those that cost-effectively promote universal access to safely managed sanitation.

Replicability & Sustainability:

Experiences from the six early adopter cities – which cover a range of planning needs, data ecosystems, and structures for sanitation service delivery – are being used to guide plans to scale up use of the tool and support its institutionalization in national decision-making processes. National partners are expected to facilitate replication with new cities and utilities, in their countries and at the regional level.



Source: (Bill and Melinda Gates Foundation, 2019)

Fact Sheet:

Thematic area	City wide inclusive sanitation services
First-year of the program	2019
Responsible institution	Athena Infonomics, the Eastern and Southern Africa Water and Sanitation Regulators Association (ESAWAS), and Aguaconsult
Target audience	Sanitation service providers and Regulators
Coverage	Lusaka (Zambia), Nakuru (Kenya), Khulna (Bangladesh), Dar es Salaam (Tanzania), Kampala (Uganda), and Trichy (India).

4. Bioremediation of legacy waste in Deoguradia, Indore

Summary:

Bioremediation is an environment-friendly technique to separate soil and recyclables from the legacy waste. The process involves stimulating the growth of micro-organisms and degrading the target pollutants without the use of any toxic chemicals to alter the environmental conditions in the legacy waste dumpsites. (Patel , 2019)

Plastic, cloth, metal and wood among other solid waste recyclables were part of the legacy waste in Indore. The increasing amount of these combustible materials had turned into a health and environmental hazard, polluting the air by catching fire time and again. (Upadhyay, 2019).

Objectives:

- To bioremediate legacy waste dumps as well as existing operational dumpsite with approximately 15 lakh metric ton of garbage within a short time span of six months.
- To reclaim 100 Acre land of worth Rs.300 Cr and develop a green belt.
- To reduce Green House Gas Emissions, soil pollution and Ground water contamination.
- To increase nearby Real state value and benefit the citizens of Indore.
- To eliminate dump fires, leachate generation, foul odour from dumpsite.

Key Stakeholders:

- Indore Municipal Corporation (IMC)
- Indore Smart City Limited (ISCL)
- Ministry of Housing and Urban Affairs, Government of India
- Citizens of Indore
- Consultants

Implementation strategy:

- In compliance with the Solid Waste Management Rules, 2016; IMC bioremediated 100% legacy waste and reclaimed 100 acres of land worth Rs. 400 Cr (The Hindu, 2020).
- Deoguradia, the legacy waste dumpsite, was divided into suitable blocks and the quantity of the waste to be bio-remedied was determined based on contouring of area to be treated.
- A long spike harrow operating in cross directions was regularly used to pull out rags, plastic, rubber, textiles etc from the rake of garbage layer.
- Rotary and horizontal screens were used to screen the coarse garbage materials.
- The recyclables like plastic, metal, textiles and glass collected from the dumpsite were bundled to be sold, and the stones and ceramics recovered while screening and raking was sent for land filling of low-lying areas.
- The soil recovered was used to refill the on-site ground to develop green landscape.
- Construction and demolition (C&D) waste recovered was sent to C&D processing facility to produce building materials.
- For the execution of the work, the authorities deployed 10 trommels, 15 horizontal screens, more than 50 excavators, backhoe loaders, and 200 plus workers.
- Indore Smart City monitored the progress and tracked the on-site execution (National Institute of Urban Affairs , 2020).

Resource Utilization:

In 2018, IMC had outsourced the manpower for the reclamation work on a contract basis. However, outsourcing was identified as significantly slow and an expensive affair. The charges by the private contractor were around Rs 500 per cubic meter which would have cost the corporation approximately 65 Crores to clear the entire waste. This exceeded the Corporation's financial capacity and they decided not to outsource the work to some agency. IMC required many heavy machineries, and decided to take the trommels, screens, excavators, backhoe loaders on rent and operated by utilising their own resources. IMC operated this machinery in two shifts and completed the work in six months. The total expenses for the project were less than 10 Crores (Patel , 2019).

Impact/ Outcomes:

- Valuable 100 acres of land has been recovered by bio-remediation process, which is now being developed as a park for the citizens.
- The National Green Tribunal has advised ULBs in Okhla, Ghazipur and Bhalswa to use the Indore model to flatten the landfills and construct bio-diversity parks (Patel , 2019).
- Foul odour has disappeared completely and there is a considerable decline in diseases arising out of the trenching ground.
- Green House Gas Emissions, soil pollution and groundwater contamination has reduced, thereby increasing the real estate value nearby. (Patel , 2019), (National Institute of Urban Affairs , 2020)

Challenges/ Lessons Learnt:

- IT-based technical innovations and environment-friendly techniques in solid waste management can be an efficient practice to monitor and tackle the legacy waste.
- The key challenge faced for the successful implementation of the Waste to energy plant was outsourcing of the manpower on a contract basis leading to slowing down of the pace of the project (National Institute of Urban Affairs , 2020).

Replicability & Sustainability:

- Indore's successful model of dealing with huge quantities of legacy waste through bioremediation can be replicated in other cities across India.
- The project has inspired more than 20 ULBs to start bio-remediation projects.

Source: (Patel , 2019)

Fact Sheet:

Thematic area	Solid waste management
First-year of the program	2018-2019
Responsible institution	Indore Municipal Corporation
Target	Treat legacy waste
Coverage	Deoguradia, Indore

5. Integration of informal waste workers: Hasiru Dala

Summary:

Hasiru Dala (started in 2010) is a member-based cooperative model of social enterprise in Bengaluru. It aims to offer services for waste collection and handling in the cities. The organisation recognises the waste pickers as formal 'green-collar workers' for streamlined waste collection in the city. It focuses on social justice of waste-pickers and waste workers through interventions co-created with the waste-pickers in the areas of identity rights, access to family education, healthcare, housing and skill development. (Hasiru Dala, 2020)

Objectives:

- To formalise the lives of the informal waste workers in Bengaluru.
- To recognise the informal waste pickers as 'green-collar workers' for streamlined waste collection in Bengaluru.
- To provide managerial training support and employ waste-pickers at the dry waste collection centres.
- To provide waste workers with regular trainings on up-gradation of their skills and technical competencies.

Key Stakeholders:

- Informal waste-pickers and waste workers
- Hasiru Dala
- Bruhat Bengaluru Mahanagara Palike (BBMP)
- Citizens
- City governments/ Municipal Authorities

Implementation strategy:

- In 2011, BBMP, the local body, issued occupational ID cards for the waste pickers (KII with Hasiru Dala)
- In 2016, there was a tripartite agreement between the city (BBMP), the waste pickers and the Hasiru Dala. Hasiru Dala acts as a third party which manages and empowers waste workers and leverages their innate entrepreneurial abilities to be a service provider and to create livelihood opportunities for waste-pickers (Arjun G. , 2018).
- The informal waste pickers in Bengaluru address the waste management needs of bulk waste generators (residential and non-residential) by providing destination-assured waste management services in the dry waste collection centres (DWCC), for all streams of segregated-at-source dry solid waste.
- These DWCCs are established by BBMP in each ward across the city of Bengaluru specific for dry, wet and sanitary waste. Infrastructure, land and the cost of setting up the DWCC is completely borne by BBMP (KII with Hasiru Dala)
- The DWCC collects the fees for the door-to-door collection from the citizens. Hasiru Dala collects fees from the bulk waste generators, pricing it to the amount of waste generated following the principle of 'polluter pays' (KII with Hasiru Dala)

Resource Utilization:

The differential variable pricing model incentivises better source segregation and gives an opportunity for waste-picker entrepreneurs to earn 4 to 5 times more than their earlier income, with better working conditions. With Hasiru Dala, a waste-picker has two sources of income - one is the fixed monthly fee at the collection centre, and the other is the revenue from the recyclables he/she gets to keep (Jain & Mukerjee, 2019). The members of Hasiru Dala receive managerial training support and employ waste-pickers at the dry waste collection centres. The waste-pickers also receive training under Hasiru Dala for up-gradation of their skills and technical competencies (Tata Centre for Development at UChicago, 2020).

Impact/ Outcomes:

- The occupational ID cards have formalised the lives of the informal waste workers in Bengaluru. Through Hasiru Dala's effort, more than 6000 waste pickers have been enumerated and given BBMP identity cards.

- Waste-pickers get benefits such as social security, health insurance and access to microfinance, to empower them to raise their standard of living.
- Hasiru Dala, in collaboration with Waste Wise Trust & Jain University conducts a certificate training program for waste workers to up-grade their skills which include managerial and technical competencies. The certificate course is first of its kind in India and is becoming popular within the waste workers' community.

Challenges/ Lessons Learnt:

- Leveraging the innate entrepreneurial skills of the informal sector and directly engaging with them as knowledge partners can be a model for cities to address solid waste management systems. This can be a way forward for a sustainable waste management solution at the city level.
- Hasiru Dala has been successful in regularising the informal sector in solid waste management and can be scaled up for policy solutions in other cities as well.

Replicability & Sustainability:

- Currently, Hasiru Dala works in Bengaluru, Tumakuru, Mysuru, Chikkaballapura, Puttur, Kudur, Mangaluru, Hubli-Dharwad, Davanagere, South Kodagu, Nanjangud, Chamarajanagara and Nelamangala in Karnataka and recently started working in Coimbatore, Tiruchirappalli in Tamil Nadu and Rajahmundry in Andhra Pradesh (Hasiru Dala , 2020).
- Directly engaging with informal waste workers as knowledge partners can be a model for other cities to address solid waste management systems.

Sources: (Jain & Mukerjee, 2019)

Fact Sheet:

Thematic area	Inclusion of informal waste workers in solid waste management
First-year of the program	2016
Responsible institution	Hasiru Dala and Bruhat Bengaluru Mahanagara Palike (BBMP)
Target audience	Informal waste workers
Coverage	Bengaluru, Tumakuru, Mysuru, Chikkaballapura, Puttur, Kudur, Mangaluru, Hubli-Dharwad, Davanagere, South Kodagu, Nanjangud, Chamarajanagara, Nelamangala, Coimbatore, Tiruchirappalli and Rajahmundry

6. Formation of gender forums and gender subgroups in Narsapur

Summary:

Narsapur, a town in West Godavari district of Andhra Pradesh, has taken various innovative approaches to provide equal representation of women in the decision-making, planning and implementation of sanitation activities. Narsapur Municipal Corporation (NMC) with support of Administrative Staff College of India (ASCI) passed a council resolution for equal representation of women in the City Sanitation Task Force (CSTF) and formed a gender sub-group under the CSTF to focus on gender-related concerns in the city.

The gender sub-group guides and takes decisions to support gender equality related interventions, including sanitation improvements such as menstrual hygiene, inclusive access to community and public toilets, user-centric facilities within them, safety, and privacy for women. Additionally, a gender forum (GF) has been created in each ward to integrate women belonging to poor and vulnerable communities. The GF serves the key objective of providing voice and agency to the needs of the community and informing the municipal body about their concerns.

Objectives:

- To provide equal representation of women in the decision-making, planning and implementation of sanitation activities in Narsapur.
- To establish gender forums in all slum and vulnerable communities.
- To sensitize the communities on gender inclusive sanitation through GFs, including key topics like Faecal Sludge and Septage Management, Menstrual Hygiene Management, hand wash, health and personal hygiene.
- To ensure capacity development in the Municipality for inclusive planning, implementation and monitoring of sanitation services.

Key Stakeholders:

- Narsapur Municipal Corporation (NMC)
- Administrative Staff College of India (ASCI)
- City Sanitation Task Force (CSTF)
- Inter-sectionality-Informed Gender Mainstreaming Framework (IIGMF)
- Center for Study of Science, Technology and Policy (CSTEP)
- Centre for Advocacy and Research (CFAR)
- Sanitation workers
- Community Organizers
- Women Self-help Groups (SHGS)
- Gender Forums
- Citizens of Narsapur

Implementation strategy:

- A detailed survey incorporating gender lens and inclusive approach was undertaken to cover the 12,000 households/properties in Narsapur with an aim to understand access to sanitation infrastructure and services as well as the attitudes and behaviors related to sanitation and hygiene practices (Administrative Staff College of India (ASCI), 2019).
- NMC with support from ASCI carried out gender audits of all the sanitation infrastructure available in public spaces such as CT/PT and in schools.
- The audit was carried out to understand and identify gender-related barriers and gaps in the sanitation infrastructure that lead to disservice to women and girls. The audit covered all the 16 CTs, 6 PTs and all 31 government schools.
- For the CT/PTs, ASCI developed a gender audit checklist (with 38 indicators) to evaluate essential features under six categories - safety and privacy, menstrual hygiene management and hygiene requirements, accessibility provision, operation and maintenance, provision for caregivers and parents, and design specifications and standard dimensions of toilet units for PwDs. The checklist for assessing water and sanitation infrastructure in schools comprises 14 indicators.

Resource Utilization:

Capacity enhancement needs assessment has been conducted and a joint agenda for training has been developed. ULB officials and elected representatives are being sensitized on FSM through trainings, workshops, exposure visits. Assistant Engineer (Environmental) in each town has been nominated as Nodal Officer for coordinating and monitoring FSM related activities. Sanitation workers, community organizers and women self-help groups (SHGS) are also being capacitated through initiatives focused on safety, well-being and livelihoods. A Gender Resource Centre (GRC) has been established in Narsapur and Kovvur to ensure gender mainstreaming in sanitation supported by GFs at slum level. With help of MEMPA women SHGs have been actively involved in sanitation activities and School Children, youth clubs, local NGOs, Bulk Generators, RWAs and ULB sanitation staff were involved (Administrative Staff College of India (ASCI), 2019).

Impact/ Outcomes:

- The gender audit has helped NMC identify the key issues and take necessary interventions to ensure financial sustainability for gender initiatives in sanitation; like allocating a gender budget of Rs. 5,00,000 for the year 2019-20.
- Additionally, NMC is providing sanitary pads and incinerators to all schools with adolescent girls using the municipal and CSR funds.
- Narsapur has encouraged entrepreneurship in emptying and transportation services. It is the only town in India to have a woman entrepreneur providing desludging services.

Challenges/Lessons Learnt

- The initiative of formation of gender subgroups under the CSTF can be adopted by all the Municipal Corporations to support CSTF's decisions on gender-related aspects including sanitation planning and improvements in the city in alignment with the National Urban Sanitation Policy.
- Workshops to involve women self-help groups in addressing sanitation, related gender issues, extending funding towards construction of toilets and promoting livelihoods/entrepreneurship would be crucial to develop gender inclusive sanitation action plan in cities (Reddy D. Y., 2019).

Replicability & Sustainability:

- Mechanisms to identify opportunities to empower women, poor and vulnerable and to engage them in sanitation planning, decision making and delivery have been now institutionalised which can be replicated to other cities (Reddy D. Y., 2019).

Source: (Narsapur Municipal Corporation , 2019).

Fact Sheet:

Thematic area	Gender Inclusive Sanitation Action Plan
First-year of the program	2016
Responsible institution	Narsapur Municipal Corporation and Administrative Staff College of India
Target audience	Women Self-help Groups (SHGS) and sanitation workers
Coverage	Narsapur, Andhra Pradesh

7. Pink toilets in Ghaziabad

Summary:

Men belonging to households without IHHLs often rely on public and community toilets. However, women and girls are reluctant to use the same public toilets mainly due to its unhygienic state, risk of harassment and sexual violence, and lack of basic facility for Menstruation Hygiene Management (MHM). Due to the lack of representation of women and members from vulnerable groups in sanitation decision-making and planning, women often face difficulties in accessing adequate sanitation and hygiene facilities when in need. Pink Toilets are exclusive toilets for women with a distinctive colour making them easily identifiable. National Commission for Protection of Child Rights (NCPCR) suggested the creation of a Pink toilet model, an exclusive toilet for women with the distinctive colour making them easily identifiable. The city of Ghaziabad in Uttar Pradesh is one of the first cities in the country to implement the women-only Pink toilet model.

Objectives:

- To overcome issues with universal access to sanitation and to make women and girls more comfortable in using public toilets.
- To construct women and child-friendly Toilet facilities.
- To generate employment opportunities for women in sanitation sector.

Key Stakeholders:

- National Commission for Protection of Child Rights (NCPCR)
- Ghaziabad Municipal Corporation (GMC)
- Sugam Samaj Seva, a non-profit organisation
- Women of Ghaziabad
- Sanitation workers

Implementation Strategy:

- The city of Ghaziabad came up with the first Pink toilet in 2018 and soon after the success of the first Pink toilet located in Raj Nagar District centre, GMC gave approval for another women's only toilet in Arjun Nagar Market. These toilets are fully air-conditioned, have CCTV camera-based surveillance to ensure safety of women users, a sanitary pad vending machine with incinerator, childcare facilities such as feeding, and diaper changing rooms.
- Pink Toilets are operated by women caretakers in order to generate employment opportunities for women and to ensure privacy.
- The toilet locations were finalised after carrying out detailed surveys and analyses to understand the footfall of women in the area. The toilet was set up on a Public Private Partnership (PPP) model, where GMC provided the land. Sugam Samaj Seva, a non-profit organisation handles the operation and maintenance of the toilet.
- Women can use these toilets at a nominal fee of INR 1, 2 and 5 for usage of urinals, toilets and bathing facilities. The air-conditioned Pink Toilet has facilities such as sanitary napkin vending machine, feeding room for lactating mothers, Wi-fi facilities and have been designed following the universal design guidelines (DelhiNCRnews , 2018).

Resource Utilization:

- Pink Toilets for women in Ghaziabad have been built by the GMC. The maintenance of the Pink Toilet is being done by Sugam Samaj Seva while the ownership vests with the GMC. Ghaziabad Development Authority (GDA) has provided free land for the construction of this toilet.

Impact/ Outcomes:

- The successful implementation of Pink toilets has led other cities and governments to take up this model.
- Telangana has passed a government order to scale up SHE toilets in the state, whereas other cities like Delhi, Noida, Hyderabad and Warangal have also replicated this model.

Lessons Learnt

- Achievement of universal access to sanitation is a basic human right and addressing the needs of women and girls and those in vulnerable situations require special efforts.

Replicability & Sustainability:

- Exclusive toilets for women like the Pink Toilet model can be upscaled to other urban and rural areas of India.

Source: (Srivastava, 2019)

Fact Sheet:

Thematic area	Universal access to sanitation
First-year of the program	2018
Responsible institution	Ghaziabad Municipal Corporation (GMC) and Sugam Samaj Seva
Target audience	Women and children
Coverage	Ghaziabad, Uttar Pradesh

8. I Got Garbage

Summary:

I Got Garbage (IGG) is a cloud-based platform which provides a technology-based solution to bring dignity to a waste picker's livelihood and focuses on replacing the landfill model with an efficient waste economy (I Got Garbage, 2020). The application suite by I Got Garbage helps break the entire waste flow into micro-activities which are captured and tracked through lightweight mobile & tablet-based applications. These activities include payments and invoicing, waste collection, vehicle tracking (GPS), facility, workforce and issue management (I Got Garbage, 2020).

Objectives:

- To provide a cloud-based platform which provides a technology-based solution to bring dignity to a waste picker's livelihood.
- To bring together an eco-system of waste pickers, non-profits, ULBs and various traders in the plastics recycling value chain onto a single digital platform.
- To work with urban local bodies and social partners to create technology-enabled inclusive waste management models.
- To co-create technology enabled Extended Producer Responsibility (EPR) models for the organizations in solid waste management.

Key Stakeholders:

- Urban local bodies
- Informal waste-pickers and waste workers
- Traders in plastic recycling market
- Social partners and NGOs
- IT sector professionals
- City governments/Municipal Authorities
- Citizens

Implementation Strategy:

The various solutions offered by IGG cloud-based platform are as follows:

- Zero Waste Cities: I Got Garbage delivers value as an advisor and program partner to urban local bodies by streamlining governance and traceability in creating zero-waste cities through solutions like SWM master planning, program management, ULB capacity building, community engagement and replicable "Zero Waste Ward" model.
- Recycling Marketplace: The I Got Garbage platform tackles the challenges of plastic pollution through its plastics recycling marketplace which brings together an eco-system of waste pickers, non-profits, ULBs and various traders in the plastics recycling value chain onto a single digital platform to build traceability and accountability in the plastic waste recycling operations.
- Empowering Waste pickers: I Got Garbage works with urban local bodies and social partners to create technology-enabled inclusive waste management models with a focus on livelihood generation for waste pickers working in the informal sector. The project equips the workers with budget smartphones, so they can check the maps and find out where they need to make pickups, while households and offices can sign up on the website to get their garbage collected for free (Swamy, 2014).
- Extended Producer Responsibility platform: The I Got Garbage platform co-creates technology enabled EPR models for the organizations with a focus on building waste traceability and livelihoods (MOSPI, 2020).

Resource Utilization:

- Working hand in hand with waste-pickers and social partners, team IGG has developed several innovative solutions such as Donate Dry Waste, Home and Community Composting, Zero Waste Services, and Community and School Engagement Programs, besides a gamut of Consulting and Technology solutions for Government Agencies, Social Enterprises, and Corporate Institutions (I Got Garbage, 2020).

Impact/ Outcomes:

- Currently, IGG has a presence in 5 Indian cities, and through partner transactions on the digital platform, over 10 million Kgs of waste has been recycled and composted (MOSPI, 2020).
- IGG has been successful in developing innovative solutions such as zero waste services, and community and school engagement programs, besides a gamut of consulting and technology solutions for government agencies, social enterprises, and corporate Institutions (I Got Garbage, 2020).

Challenges/Lessons Learnt

- Technology can be used to promote better management of solid waste in the cities in route planning for waste processing and resource optimisation (Prabhakar & Mehrotra, 2015).
- Cloud-based IT platforms can act as the backbone for all the applications used by social enterprises and rag pickers to formally carry out their daily business transactions in solid waste. Thus, rag pickers can access a structured marketplace to manage their business operations like waste collection and presenting digital invoices for their services (Mehra P. , 2015).

Replicability & Sustainability:

- This platform is currently being used in 5 cities in India

Source: (Mehra P. , 2015)

Fact Sheet:

Thematic area	Use of IT in improving efficiency
First-year of the program	2014
Responsible institution	I Got Garbage
Target audience	Informal Waste workers and citizens
Coverage	Bengaluru, Mumbai, Pune, Hazaribagh, Bhubaneswar

9. Innovation in toilets: GARV

Summary:

GARV Toilets is a Faridabad-based start-up, founded in 2015 (N Madhvan, 2019). GARV Toilets are providing smart sanitation services for the public toilets (PTs) and community toilets (CTs) in the urban and peri-urban areas, specifically catering to the low-income and under-served communities (Garv Toilets, 2020). These toilets are portable, toilet structures made of stainless steel which ensures high durability and makes them rust-proof. GARV Toilets are a self-sustainable toilet design and business model, which can be scaled rapidly, while addressing the issues related to toilet maintenance —operational costs and efficient, decentralized waste treatment (Idle, 2019).

Objectives:

- To provide smart sanitation services for the PTs and CTs in the urban peri-urban areas.
- To cater to the sanitation needs of low-income and under-served communities, women, children and disabled.
- To provide self-sustainable toilet design and business model.
- To implement universal design guidelines in Toilet construction.

Key Stakeholders:

- Low income and under-served communities in urban and peri urban areas
- Children, women, elderly and physically disabled people
- Ministries responsible for sanitation Regulators
- City governments/ Municipal Authorities
- Development finance institutions

Implementation Strategy:

- Toilet Models: These toilets come in four different models- Peek-a-Poo: Toilets for Schools (kid-friendly toilets), Garv Swabhiman: Toilets for Her (toilets with sanitary napkins and incinerator), Garv Galva: CT/PT (galvanised steel toilets for communities and public) and Garv Stainless Sparkle: CT/PT (stainless steel toilets for communities and public) (Garv Toilets, 2020).
- Technology Innovations: Each toilet comes integrated with LED lights, dustbins, and an exhaust fan for ventilation. Other optional features like automated flush and floor cleaning system, sanitary pad vending machine, Radio Frequency Identification System (RFID) and IoT technology can be added based on the customer needs. Additionally, all toilet units are solar powered which always ensures electricity to keep the light and other automatic features operational. An option for an attached bio-digester unit, to treat the generated sludge, is also available (Garv Toilets, 2020).

Resource Utilisation:

- Using the GARV toilet is free and the organisation prefers to set up partnerships with municipal corporations for both installation, and operation & maintenance of the toilets. The organisation seeks to generate revenue from advertising and business partnerships like partnering with mobile phone operators, who lease out Wi-Fi hotspots and provide mobile phone recharging services (Dietvorst, 2016).

Impact/ Outcomes:

- GARV Toilets have partnered with CSR wings of major organisations with the support of NGOs to deliver safe sanitation facilities to low-income communities, reaching over 45,000 school children in India.
- Apart from various ULBs, Delhi Metro Rail Corporation has signed a PPP agreement with GARV Toilets to provide smart sanitation centres in the metro stations. After a successful endeavour in India, GARV Toilets have now started operating in Bhutan, Ghana and Nigeria (Garv Toilets, 2020).

Challenges/Lessons Learnt:

- Smart technology enabled prefabricated modular design toilets which can be easily assembled on site in a few hours can improve access to toilets.

Source: (Garv Toilets, 2020)

Fact Sheet:

Thematic area	Use of IT in improving efficiency
First-year of the program	2015
Responsible institution	GARV Toilets
Target audience	Low income and under-served communities
Coverage	Bengaluru, Mumbai, Pune, Hazaribagh, Bhubaneswar

10. SBM-NULM convergence: Formalising informal workers through Livelihood Centres, Nahan, Himachal Pradesh

Summary:

In the guidelines for the convergence of SBM(U) and DAY-NULM, MoHUA has specified the need to strengthen the community engagement platforms for better and equitable sanitation and solid waste management outcomes. Under DAY-NULM, in the small town of Nahan in Himachal Pradesh; the informal workers have been identified as capable of providing basic street cleaning services on behalf of the Municipal Council Nahan (MCN) to RWAs and their own communities (Ministry of Housing and Urban Affairs, 2018).

Objectives:

- To manage street sweeping in the entire town and achieve SBM-U and DAY-NULM objectives.
- To mobilize and motivate street sweepers and seek registration with the CLC.
- To provide employment benefits to the street sweepers in Nahan.
- To engage and empower the workers and citizens in the town of Nahan.

Key Stakeholders:

- Municipal Council Nahan (MCN)
- City Livelihoods Centre, Nahan (CLC)
- Residential Welfare Associations in Nahan
- Street sweepers and workers in low income settlements of Nahan

Implementation Strategy:

- In 2015, the Municipal Council of Nahan under DAY-NULM established a City Mission Management Unit (CMMU) comprising of an executive officer, a city manager, two community organizers and two volunteers.
- The CMMU setup the City Livelihood Centre (CLC) as an independent body registered under the Societies Registration Act 1860 to address livelihood concerns. CLC's role was to facilitate access to institutional credit, social security and to enable the urban poor to access emerging market opportunites through skilling programs (Urban Management Centre, 2019).
- MCN supported the establishment of City Livelihoods Centre (CLC) by deploying managers, computer operators and supporting staff. As part of the SMID component under DAY-NULM, the MCN identified workers living in the low-income settlements of the city to engage them in street-sweeping activities for the MCN.
- A proposal to manage street sweeping in the entire town and achieve SBM-U and DAY-NULM objectives was developed by CMMU and submitted to the Municipal Council of Nahan. The proposal was approved and CLC, Nahan was awarded the official street sweeping contract.
- The registered street sweepers with CLC get trainings on financial literacy, behaviour change communication, health and sanitation (Ministry of Housing and Urban Affairs, 2018).

Resource Utilisation:

- The CLC charges MCN a monthly fee of Rs 50,000 to support the local body in the SWM cell in street-sweeping. Over time, these activities have made the CLC financially stable and have ensured sustained and transparent wages for the workers with social security benefits like Provident Fund (PF). CLC also facilitates opening their accounts under the Jan Dhan Yojana (Urban Management Centre, 2019).
- Payments to the street sweepers have been regularized with each sweeper now earning Rs. 7,560 per month (Rs. 5,940 as salary and Rs. 1,620 as provident fund) compared to Rs. 4,000 they were earning while hired by the contractor. The sweepers are linked with the Pradhan Mantri Bima Suraksha Yojana – the national life insurance scheme. The Below Poverty Line (BPL) families among the sweepers have also been linked with the Rashtriya Swasthya Bima Yojana (RSBY) scheme for health insurance. Beyond economic empowerment, health and social security has improved for the workers (Urban Management Centre, 2019).

Impact/Outcomes:

- Nahan city is visibly cleaner since the initiative was implemented, as the workers are accountable, with the citizens involved in monitoring process.
- CLC Nahan is further preparing the database for the workers to explore other services which can be contracted from different government departments.
- Following the successful initiative in Nahan, the neighbouring towns have requested CLC Nahan to initiate similar work in their areas.

Challenges/Lessons Learnt:

- The convergence of SBM(U) and DAY-NULM can strengthen the community engagement platforms for better and equitable sanitation and solid waste management outcomes.
- Establishing linkages and convergence with existing government schemes facilitates easy expansion of the social security net to the informal workers.

Replicability & Sustainability:

- The initial establishment of the Nahan CLC was supported by a grant of Rs. 10 lakhs from DAY-NULM, but it has now become a financially self-sustaining institution. The overall revenue of the Nahan CLC has reached Rs 1.25 Cr., of which the street sweeping contract generated nearly Rs 11 lakhs annually as of 2017.
- The business model of the CLC is based on charging a 10% commission for all services provided, including collective contracts and individual call-based services. The CLC also provides placement assistance to candidates who have completed skill training programs, and charges 10% of the placed candidate's first months' salary as a one-time fee.
- The model is going to be upscaled in all the tehsils of Sirmaur district. The initiative has already been replicated successfully in the neighbouring town of Poanta Sahib through the establishment of a branch office of the Nahan CLC. A pilot to engage 100 persons for door-to-door waste collection has been initiated in the city of Solan as well (Urban Management Centre, 2019).

आलम

लोगों को घर-द्वार पर इलेक्ट्रीशियन, प्लंबर, की सेवाएं होंगी उपलब्ध

नाहन में खुलेगा शहरी आजीविका केंद्र

■ नगर संवाददाता, नाहन

यदि सब कुछ ठीक रहा तो जल्दी ही नाहन नगर परिषद द्वारा शहरवासियों को घर-द्वार पर ही मूलभूत सुविधाएं उपलब्ध करवाई जाएंगी। जानकारी के मुताबिक नाहन नगर परिषद द्वारा नए साल पर नाहन में शहरी आजीविका केंद्र खोला जा रहा है। इस केंद्र के खुलने से जहां शहर के लोगों को घर-द्वार पर एक फोन कॉल पर इलेक्ट्रीशियन, प्लंबर, ब्यूटीशियन, टेलर, ड्राइवर, सर्वेंट, डाटा एंट्री आपरेटर, सेल्समैन और दैनिक मजदूर इत्यादि की सेवाएं घर बैठे उपलब्ध होगी, वहीं दूसरी ओर बेरोजगारों को भी स्वरोजगार मिलेगा। शहर में रह रहे प्रशिक्षित और अप्रशिक्षित बेरोजगारों के लिए नाहन नगर परिषद की ओर से रोजगार की नई संभावनाएं प्रदान करने के उद्देश्य से शहरी आजीविका केंद्र की स्थाना की जा रही है। सूत्रों के अनुसार राष्ट्रीय शहरी आजीविका मिशन के तहत राज्य सरकार को शहरी विकास विभाग की ओर से नाहन में शहरी आजीविका केंद्र खोलने की अनुमति मिल चुकी है और नाहन शहर के वार्ड नंबर एक में नजदीक गौरा भवन, ढाबों एरिया और सरकारी प्राइमरी स्कूल के नजदीक शीघ्र ही इस केंद्र की स्थापना की जाएगी। इस केंद्र में 18 साल से अधिक आयु वाले प्रशिक्षित और अप्रशिक्षित महिला व पुरुष अपना पंजीकरण करवा सकते हैं।

पंजीकरण फार्म नगर परिषद नाहन कार्यालय से दस रुपए में प्राप्त किया जा सकता है। शहरी आजीविका केंद्र जल्द ही नाहन में सुविधाएं प्रदान करने वाली एकमात्र संस्था के रूप में उभरने वाली है। इसके टोल फ्री नंबर पर कॉल करने से लोगों को घर बैठे सुविधा उपलब्ध होगी।

नए साल पर शहर के लोगों को यह सुविधा उपलब्ध करवाने के लिए नगर परिषद द्वारा पूरी तैयारी की जा रही है और जल्द ही केंद्र का टोल फ्री नंबर और मोबाइल एप जनता को उपलब्ध करवाई जाएगी।

Source: (Urban Management Centre, 2019)

Fact Sheet:

Thematic area	Unlocking synergies with other programmes
First-year of the program	2017
Responsible institution	Municipal Council Nahan (MCN) and City Livelihoods Centre, Nahan (CLC)
Target audience	Street sweepers
Coverage	Nahan, Himachal Pradesh

F.Deendayal Antyodaya Yojana – National Urban Livelihood Mission (DAY-NULM)

1. Unified registry of the poor (Brazil)

Summary:

The Unified Registry for Social Programs of the Brazilian government (Cadastro Único) is a tool for identification and socio-economic characterisation of low-income families that can be used for social programs and policies geared towards such families. The Unified Registry database allows the government to understand who the poorest and most vulnerable population segments are.

Objectives:

Brazil's targeted poverty alleviation programmes rest on the creation of a national registry of the poor – an online database of the poor to allow for more effective targeting. The main objectives of Cadastro Unico Para Programas Socias are (Barca, 2017):

- Registration of families that earn monthly income up to one half of a minimum wage per person or on a total of three minimum wages per family. The database can identify and provide characteristics of the socially vulnerable population
- Linking existing policies and building a social protection network
- Generate an effective planning tool for social protection and poverty alleviation programmes
- Aids in measuring poverty and vulnerability dimensions and acts as a poverty map of the country
- Converge social protection and welfare efforts to prioritise the offer of services to families in vulnerable situations

Key Stakeholders:

- National Secretariat of Citizenship Income (SENARC) of the Ministry of Social Development and Fight against Hunger (MDS)
- Caixa Econômica Federal (Caixa)
- State Governments and Municipalities
- Ministry of Employment
- Brazilian Federal Revenue Office
- INSS National Institute of Social Security
- Ministry of Planning, Budgeting and Management
- Ministry of Social Security
- Beneficiaries of government-sponsored social service schemes (30)

Implementation strategy:

Cadastro Unico Para Programas Socias (Unified Registry for Social Programs) was created in 2001 by the Ministry of Social Development (MDS). Cadastro Unico (CadUnico) is a single database that contains information about extremely poor and poor families that may qualify for different social programs. Cadastro Único's main role is to support the identification and socio-economic characterisation of low-income Brazilian households to support beneficiaries' selection for social assistance programs run by the federal government.

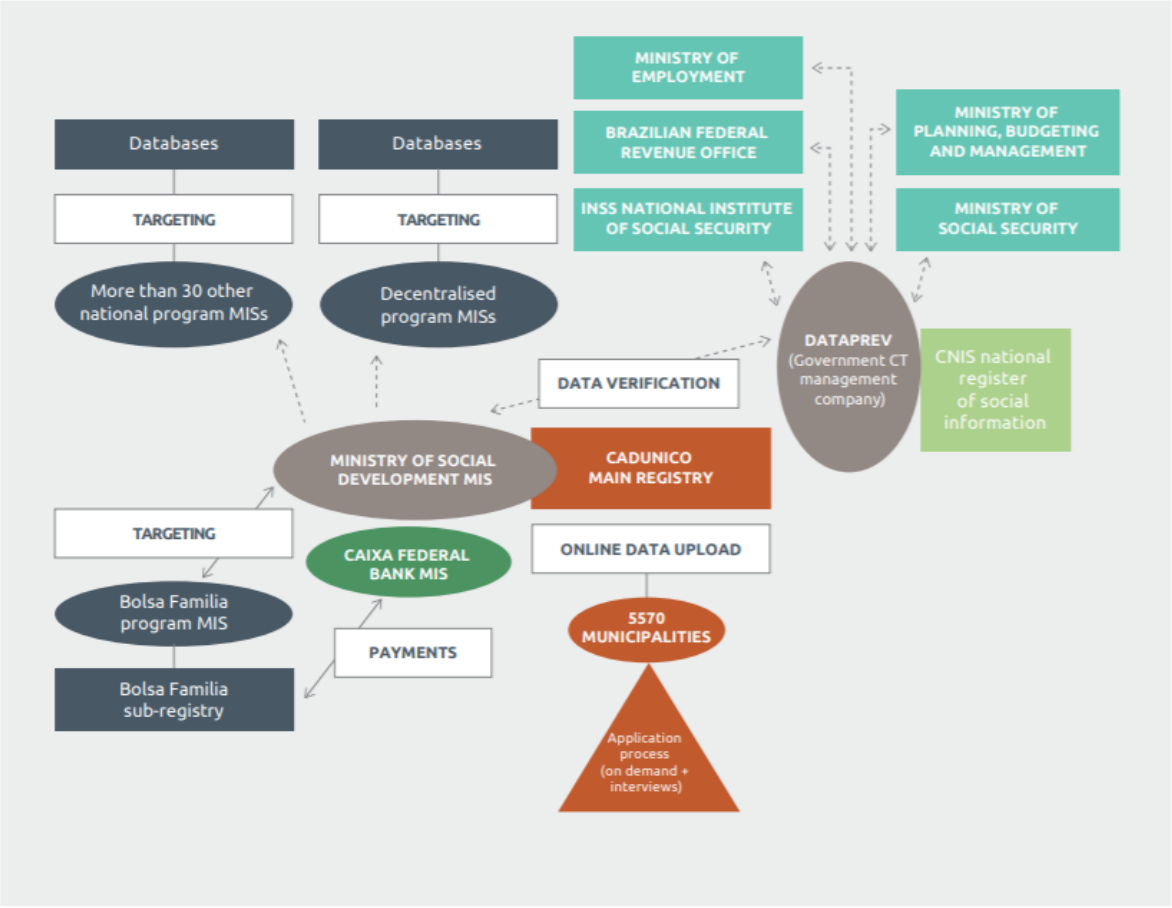
The different government tiers use this database to determine which families and individuals are eligible for the 30 government-sponsored social service schemes. These include (Barca, 2017)

- Social Programmes: Bolsa Família; 71 Auxilio Emergencial Financeiro (emergency financial aid); PETI (child labour eradication); Bolsa Verde (Green Grant); Programa de Fomento as Atividades Produtivas Rurais (support to rural productive activities)
- Taxes and contributions: Tarifa Social de Energia Elétrica (Social Tariff for Energy); Carteira do Idoso (Senior Citizen ID); fee waiver for civil service tests; Telefone Popular (Popular Telephone Program); Minha Casa Minha Vida (My House, My Life) and other housing programs (Ministry of Cities); Programa Nacional de Crédito Fundiário; etc.
- Infrastructure: Água Para Todos (Water For All); Programa Cisternas (Cistern Program); etc.

- Social services: Brasil Carinhoso (Affectionate Brazil creches); Brasil Alfabetizado (Literate Brazil); Mais Educação (More Education); National Program for Access to Vocational Training and Employment (Pronatec); etc.

Resource Utilisation:

The institutional arrangement Cadastro Único involves the federal government, states, federal districts and municipalities. At the federal government level, National Secretariat of Citizenship Income (Senarc) of the Ministry of Social Development and Fight against Hunger (MDS) has the overall responsibility for coordinating, monitoring and supervising the implementation and execution of the registry. The federal government also extends financial support to the municipalities and the Federal District to support ongoing registration, update existing entries and maintain the data's quality. Caixa Econômica Federal (Caixa) at the federal level is responsible for assigning social identification number (NIS) for each registered person and coordinating with the municipalities. State governments provide technical support to municipalities that need to manage Cadastro Único at their level by conducting training, supporting the improvement of municipal infrastructure and troubleshooting on any operational or technical issues. Municipalities are responsible for identifying areas where there is a high incidence of poverty, collecting poverty data, and inclusion and updating data in the Cadastro Único system. Municipalities also promote home-visits to low-income families periodically to register. Thus, this system ensures that no low-income family is left out of the country's social system (Ciaxa, 2020). The figure below presents the overall structure of Brazil's Cadastro Único:



Source: (Ciaxa, 2020)

Funding for the programme is provided at the federal level. The Federal Government then provides financial support to municipalities and the Federal District through the transfer of funds calculated via the Municipal Decentralized Management Index - IGD-M. These funds are used to support the creation of new entries, update existing ones, and maintain the data's quality. (WWP, 2015)

Impact/ Outcomes:

- The CadUnico database has information about more than 40 per cent of Brazilian households, which is about 80 million people. This dataset is comprehensive and contains detailed and precise information about the country's vulnerable and low-income families. This precision is key to effective

targeting of the numerous social programs and finding the eligible participants. The use of high-tech solutions for the management of the single registry; generating poverty maps to improve identification and targeting of poor, and automation of the payment system have facilitated the program's spread and improved transparency in its operations.

Challenges/ Lessons Learnt:

- One major challenge that CadUnico tackled was that most of the poor families lived in slums (or favelas) with no address or permanent residence. Being illegal settlements, these favelas did not have any pin codes and were not in the government systems. This made it difficult for them to furnish documents required for registration. CadUnico overcame this shortcoming using intelligible questions about the housing situation of the respondent. (Poverty, 2001)

Replicability & Sustainability:

- The biggest success factor for CadUnico for serving as the backbone for its social programs since the 2000s has been reducing social programs' transaction costs and making it possible to register all poor and vulnerable families along with their socio-economic characteristics. This has aided to inclusive target setting for social programs (Poverty, 2001)

Fact Sheet:

Thematic area	Registry for Social Programs
First-year of the program	2001
Responsible institution	Ministry of Social Development and Fight against Hunger (MDS) – National Secretariat of Citizenship Income (SENARC).
Target audience	Low-income families
Coverage	Brazil - National

2. Active search strategy (Brazil)

Summary:

Brasilia Sem Miseria (BSM) program was launched in 2011 by the Government of Brazil to address the multidimensional nature of poverty that could manifest due to a lack of food and nutrition, a shortage of access to education, healthcare, water, electricity, and housing, and a lack of professional training and work opportunities[1]. The main source of information for the program to identify and select beneficiaries is Cadastro Único. However, this program includes Busca Ativa or Active Search, which aims to help the poor population isolated due to geographically remote areas or lack of information. It aims to register such families under BSM.

Objectives:

- To ensure inclusion and participation of the most remote and vulnerable population in Bolsa Familia and Brasilia Sem Miseria. The active search program's motive is that families in poor and remote areas find it difficult to register themselves.

Key Stakeholders:

- Ministry of Social Development
- National Commitment for Social Development (CNDS)
- The World Bank
- State Governments and Municipalities
- Reference Center for Social Assistance
- Remote and vulnerable population

Implementation strategy:

Social workers, community health agents and local BFP managers, among others, are responsible for home visits, door-to-door canvassing, mobile units and other strategies ensuring the participation of the most remote and vulnerable population in the country. In some cases, the head of the family cannot make time or cannot physically travel to government premises. In other cases, the families cannot afford the travel from remote locations or are not aware of their eligibility status.

Resource Utilisation:

The data collection for registration with Cadastro Único is a dynamic process that involves a combination of methods and resources such as (Barca, 2017):

- Fixed service stations for ongoing on-demand registration. There are around 9,413 service centres which include 5,123 Centros de Referência de Assistência Social (Social Assistance Reference Centres
- Mobile service stations, including registration task forces and occasional census surveys
- Home Visits

Impact/ Outcomes:

After its launch in 2011, 1.1 million extremely poor families were registered in the single registry and added to the PBF due to the active search strategy implemented under BSM. The active search program led to the inclusion of 1.7 million families in Cadastro Unico from 2011 to 2017.

Challenges/ Lessons Learnt:

- The precision-targeting action is one of the main legacies acquired within the management and implementation of social policies through this tool.

Replicability & Sustainability:

- Bulsa Ativa or Active Search is used as a research and monitoring tool along with Single Registry and aims to generate an all-inclusive targeting process. However, despite these monitoring mechanisms in place, there may be a need to establish a more in-depth follow-up approach for these measures to sustain.

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[1] Brasilia Sem Miseria (Brazil) is presented in further detailed in Case Study: 4

Fact Sheet:

Thematic area	Active Search for Registry in Social Programs
First-year of the program	2011
Responsible institution	Ministry of Social Development and Fight against Hunger (MDS) and Reference Center for Social Assistance
Target audience	Remote and vulnerable population
Coverage	Brazil - National

3. Urban Partnership for Poverty Reduction (UPPR) - Bangladesh

Summary:

To improve the livelihoods and living conditions of 3 million urban poor and extremely poor people, especially women and children, The Urban Partnership for Poverty Reduction (2008-2014), implemented jointly by UNDP and DFID in Bangladesh, contributed to urban poverty reduction by directly improving the living environment and social and economic conditions of urban low-income families in 30 towns and by influencing national and local urban poverty reduction and economic development policies.

Objectives:

To improve land tenure security, access to community infrastructure for a healthy living environment, and access to essential services such as health facilities and finance for improved housing and entrepreneurship, thereby improving children and women's livelihoods and living conditions.

Key Stakeholders:

- Ministry of Local Government, Rural Development and Co-operatives
- Local Government Engineering Department (LGED)
- Corporations
- 30 Cities and Towns
- UNDP
- DFID

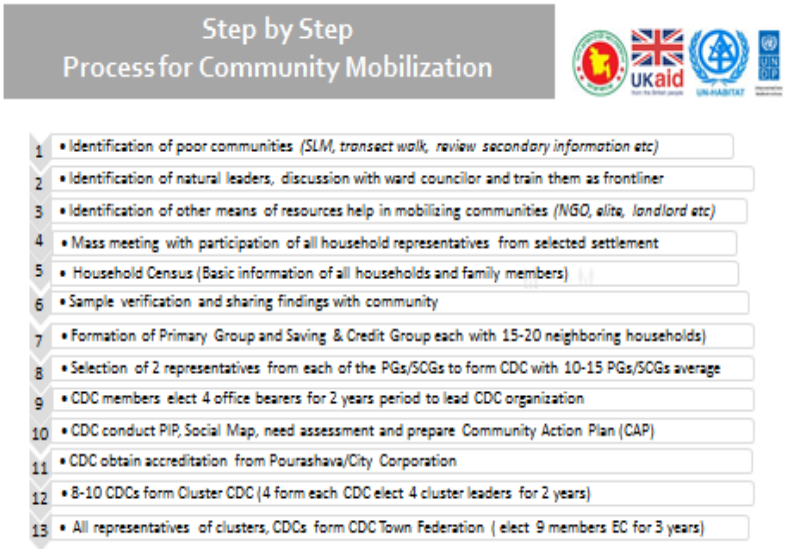
Implementation strategy:

The review of the programme documents of UPPR indicates similarity in the output and intervention strategies with the DAY-NULM Mission. Key similarities include:

- Both UPPR and DAY-NULM Mission emphasise community action planning and institutional development of community institutions. Hence, mobilisation of the urban poor lies at the core of both the programmes
- To address the social and economic vulnerability of poverty, both the programmes incorporate activities that seek to increase the knowledge and skills of the urban poor in accessing employment and business opportunities. This includes skill development and training, enterprise development through access to finance, markets and technology, and supports access to financial services for productive and non-productive purposes
- Both the programmes support and encourage community institutions through social groups like SHGs/federations to overcome social/economic problems
- Partnerships with the private sector and civil society are envisaged for the implementation of pro-poor policies and practices under both DAY-NULM and UPPR

As indicated earlier, UPPR has its foundation in participative community action planning, from which community contracts were developed for settlement improvements and socio-economic activities. Communities themselves executed the contracts and managed project funds.

Source: (DFID)



Resource Utilisation:

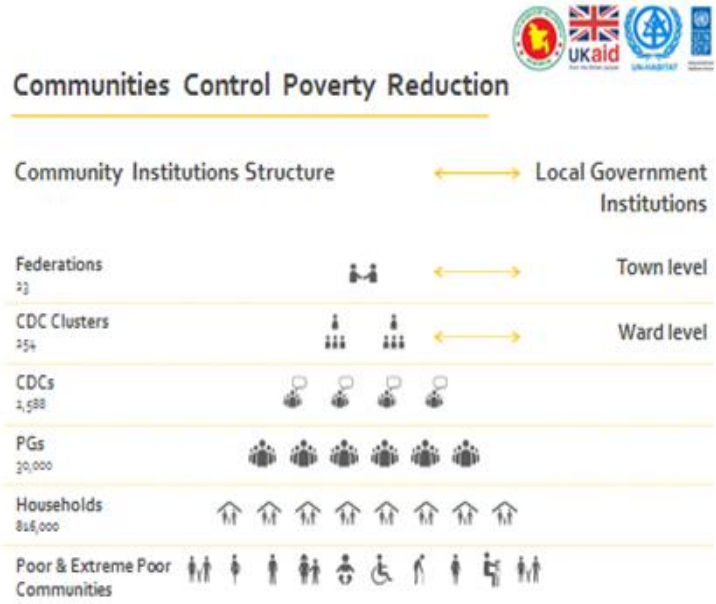
UPPR worked towards mobilising the urban poor to build their own organisations and take their demands further to the municipal authorities. This approach made space for vulnerable community members and

worked towards their empowerment to make decisions and implement solutions. They promoted the formation of Primary Groups (PG), comprising of 20 households, which further formed CDCs to assess the community's physical and socio-economic needs and develop plans.

Source: (DFID)

Impact/ Outcomes:

UPPR reported significant improvement in reducing multidimensional poverty and in promoting women's empowerment (Urban Partnerships for Poverty Reduction, 2015):



- There was a poverty reduction in the 12 UPPR towns, as indicated by the Multi-dimensional Poverty Index (MPI). The MPI was 23 per cent in 2014 (reduced from 33 per cent in 2013), and percentage of nutrition deprived households fell to 12 per cent (from 68 per cent in 2013)
- Findings of the Women's Empowerment Scorecard conducted in 22 UPPR towns reveal that more than 90 per cent of 2,700 women community development committee members reported moderate to high levels of empowerment

Challenges/ Lessons Learnt:

- Encouraged the municipalities to consider community-driven organisations as long-term development partners. This was done through building skills and abilities of communities.

Replicability & Sustainability:

- UPPR focuses on a community organisation model to deliver benefits and aims to go beyond the project's life and organisational structures. It has been instrumental in fostering linkages leading to stronger relationships between service providers and communities. This was because it followed the approach where communities were empowered by creating their skills and abilities through multiple tools.

Fact Sheet:

Thematic area	Urban Poverty Alleviation
First-year of the program	2008
Responsible institution	Ministry of Local Government, Rural Development and Co-operatives
Target audience	Urban Poor Population
Coverage	30 Cities and Towns

4. Brasilia Sem Miseria (Brazil)

Summary:

Brazil Without Extreme Poverty Plan (BSM) aims to overcome extreme poverty in Brazil while considering the multidimensional nature of poverty. Poverty often stems from shortcomings in food and nutritional security, education, health, access to water and electricity, housing, professional training and livelihood opportunities. The BSM was structured to address the following areas: 1) Income guarantee, 2) Access to public services, to improve families' health and education and to enhance their citizenship rights, and 3) Productive inclusion, to increase the skills, employment and income-generating opportunities of the poorest urban and rural families (BSM Plan Fact Sheet WWP, 2015).

Objectives:

- Search and Register all poor Brazilian families in the Unified Registry for Social Programs (For more details, please refer to Case Study 1) and refer them to social services. Improve this enrolment through introduction into formal employment, entrepreneurship or Solidarity Economy projects
- Ensure a minimum monthly income of R$77,00 per capita for the members of all Brazilian families
- Deliver services and assistance in health, education etc. to the country's poorest localities and communities
- Enhance the supply of nursery care centres and improve care for Bolsa Familia children aged between 0 and 48 months
- Make public policies to create opportunities, increase incomes, and enhance the quality of life to families living in rural areas (BSM Plan Fact Sheet WWP, 2015).

Key Stakeholders:

- Ministry of Social Development and Fight Against Hunger (MDS) — Extraordinary Secretariat for Overcoming Extreme Poverty (SESEP)
- Staff Office of the Presidency of the Republic (Casa Civil)
- General Secretariat of the Presidency of the Republic (SG)
- Ministry of Finance (MF)
- Ministry of Planning and Budget (MOP)
- Ministry of Agrarian Development (MDA)
- Ministry of Education (MEC)
- Ministry of Health (MS)
- Ministry of Cities (MCidades)
- Ministry of Labor and Employment (MTE)
- Ministry of National Integration (MI)
- Ministry of Environment (MMA)
- Ministry of Mines and Energy (MME)
- Ministry of Social Security (MPS)
- Ministry of Agriculture, Livestock and Supply (MAPA)
- Ministry of Development, Industry and Foreign Trade (MDIC)
- Ministry of Fisheries and Aquaculture (MPA)
- Departments in the areas of Institutional Relations, Human Rights, Women's Policies, Racial Equality and Strategic Affairs
- All the States and municipalities
- Public and private companies
- Not-for-profit entities

Implementation strategy:

- Similar to DAY-NULM, the BSM also seeks to generate employment for the most vulnerable in the age group 18 to 65 years, using professional training courses, mediation of employment and expansion of microcredit policy. The main strategies of BSM are similar to the strategies outlined under the EST&P and SEP sub-components of DAY-NULM.
- Both programmes seek to increase the participation of urban poor in the labour market by providing training courses aligned with the nature of work available in each region.

- Both programmes promote coordination of various government programs to create new opportunities for local economic development, expand the market for small businesses, stimulate the formation of cooperatives or SHGs, and support micro-entrepreneurship by using microcredit policies

Resource Utilisation:

SESEP is responsible for managing Brazil without Poverty Plan, designed to enhance those already successfully combating poverty. Around 100 programs and actions currently involve various ministries, a range of federal agencies, public banks, States, municipalities, and the private and third sectors.

Actions are monitored through thematic Situation Room which employs a system of inter-ministerial coordination and use IT tools accessible to partners, States, municipalities and citizens. The municipalities are key stakeholders, especially because these local government structures are the most aware of ground realities. (BSM Plan Fact Sheet WWP, 2015).

Impact/ Outcomes:

Thanks to BSM, almost half a million beneficiaries went on to formalise their businesses, undertaking 3.9 million microcredit operations with publicly-owned banks. In rural areas, 830,000 cisterns were built or installed in semi-arid regions, 300,000 families were provided electricity connections, and 346,000 low-income family farmers received technical assistance, tools and financial resources to improve their productivity. There was a further reduction in extreme poverty levels to approximately 3% of the population, a considerable achievement on this front.

Challenges/ Lessons Learnt:

- Using the Situation Rooms approach that includes Active Search (For more details on Active Search Programme, refer to case study 2) and Single Registry, the program offers a cost-effective approach to addressing poverty due to efficient targeting.

Replicability & Sustainability:

- BSM's results have successfully surpassed expectations. This has been possible due to firm political decisions, excellent management by the technical teams, and implementation of policies at all levels – federal, state and municipal. The sustainability of the project heavily relied on including poverty eradication as one of the topmost government priorities.

Fact Sheet:

Thematic area	Poverty Alleviation
First-year of the program	2011
Responsible institution	Ministry of Social Development and Fight Against Hunger (MDS) — Extraordinary Secretariat for Overcoming Extreme Poverty (SESEP)
Target audience	Identified from the Unified Registry for Social Programs - not just restricted families in extreme poverty. The Plan includes initiatives aimed at people in other income levels as well as at different target audiences (traditional and specific population groups). (BSM Plan Fact Sheet WWP, 2015).
Coverage	National, with priority, focused on certain regions

5. City-wise poverty mapping – NUPRP (Bangladesh)

Summary:

To remove rural bias in poverty reduction from the government systems and bring about a sustainable change in the functioning of institutions for the poor in cities, the Government of Bangladesh (GoB), with funding support from DFID UK, introduced the National Urban Poverty Reduction Programme (NUPRP) in 2015. UNDP implements NUPRP in partnership with GoB, Local Government Division and the Ministry of Local Government, Rural Development & Cooperatives (MLGRD&C). The planned period for the initial implementation is six years, from 2015 to 2021. The programme is being implemented in 20 towns (12 city corporations and 8 Paurashavs). The figure below presents an overview of the programme:

<table>
<tr><td colspan="5">Goal: Contribute to balanced, sustainable growth and reduction, of urban poverty in Bangladesh.</td></tr>
<tr><td colspan="5">Outcome: A sustainable improvement in the livelihoods and living conditions of up to 6 million poor people living in urban areas.</td></tr>
<tr><td colspan="5">Target urban areas: NUPRP will work nationwide and cover up to 6 million poor people living in cities and towns in Bangladesh, and be open to all City Corporations and Class A Pourashavas. NUPRP will initially focus on up to 36 cities / towns in two phases.</td></tr>
<tr><th>Component 1</th><th>Component 2</th><th>Component 3</th><th>Component 4</th><th>Component 5</th></tr>
<tr><td>Strengthened pro-poor urban management, policy and planning</td><td>Strong community organisations and an effective voice for the urban poor</td><td>Improved economic and social well-being for the urban poor</td><td>More secure tenure and housing finance for the urban poor</td><td>Improved resilient infrastructure in, and serving, low-income settlements</td></tr>
<tr><td rowspan="3">1A Strengthened municipal pro-poor urban management and planning
(a) Strengthened pro-poor municipal urban governance
(b) Strengthened municipal financial management and performance
(c) Strengthened municipal pro-poor and climate resilient urban planning</td><td rowspan="3">2A More community level structures created
2B Community-to-community support services established</td><td>3A Skills and enterprise development for the urban poor provided</td><td>4A Improved tenure security</td><td>5A Improved community-based infrastructure</td></tr>
<tr><td>3B Improved nutrition</td><td>4B Improved access to housing loans and financing</td><td>5B Better municipal climate resilient infrastructure</td></tr>
<tr><td>3C Prevention of early marriage strengthened</td><td>4C Affordable and resilient housing for the urban poor promoted</td><td>(5A) Settlements Improvement Fund</td></tr>
<tr><td rowspan="2">1B Strengthened national pro-poor policy and organisation capacity
(a) Strengthened national urban policy frameworks and implementation
(b) Strengthened national urban networks</td><td rowspan="2"></td><td>3D Prevention of violence against women and girls strengthened</td><td>Community Housing Development Fund</td><td rowspan="2">(5B) Climate Resilient Municipal Infrastructure Fund</td></tr>
<tr><td>Socio-Economic Fund</td><td></td></tr>
</table>

Source: (UNDP, 2016)

Objectives:

- To contribute to balanced, sustainable growth and reduction, of urban poverty in Bangladesh.
- The project includes five components: Strengthened pro-poor urban management, policy and planning; Strong community organisations and an effective voice for the urban poor, Improved economic and social well-being for the urban poor; More secure tenure and housing finance for the urban poor and; Improved resilient infrastructure in, and serving, low-income settlements.

Key Stakeholders:

- Local Government Division
- The Ministry of Local Government, Rural Development & Cooperatives (MLGRD&C)
- City Corporations

- Paurashavs
- DFID
- UNDP

Implementation strategy:

NUPRP aims to tackle the city-wide and more structural drivers of urban poverty, including tenure insecurity, poor municipal governance, lack of economic development and jobs and resilience. The programme aims to enhance the municipal governments' capacity to make them more accountable and lead to sustainable solutions to tackle urban poverty in the long run. NUPRP emphasises the need for a multi-level approach to strengthening the policy framework, institutional capacities and space for organisations and networks to engage, advocate and influence pro-poor, inclusive urban policies and programmes. The municipal level intervention draws from the experience of the Urban Partnerships for Poverty Reduction (UPPR) programme implemented from 2008 to 2015 (UN-Habitat). It builds on the experience of UPPR by addressing issues relevant to three critical areas, which are

- to build the capacity of the local government to plan and budget for the poor and to incorporate their voices in the decision-making process;
- to empower the local communities and to scale up the UPPR model of CDCs into new areas and
- to invest in urban infrastructure rehabilitation, focusing on improving and connecting informal communities with external investment options.

The intervention for the enhancement of municipal capabilities is to be undertaken in the following four areas:

- Involving poor men, women and children in the urban planning process: This includes the establishment of community development units, selection of community volunteers to mobilise and organise [communities and the provision of technical assistance to support relationship development, group formation and community contracting.
- Improving municipal financial management: This includes rationalising local taxes; improving revenue collection; reforming accounting, budgeting and financial management procedures; legislative amendments to enable higher resource mobilisation; pro-poor resource allocation based on evidence and dialogue; and improving public administration.
- Improving town/city leadership on local economic development: This includes the inception of resilient economic development plans at the municipal or local level, generating evidence on economic opportunities and options, and developing medium-term plans to attract public-private partnership.
- Strengthening poverty and resilience focus in planning and development: This includes town or city-level hazard risk assessment; developing settlement land maps, integrating climate resilience into town plans; identifying pilot programmes to support a low-carbon path and low-cost resilience; and capacity building for the town planning unit.

Resource Utilisation:

NUPRP makes use of statistical analysis to develop strategic plans at the municipal levels. These maps help identify the poor in the community and highlight gaps in the provision of necessary facilities. The tools used under the NUPRP to generate the poverty maps includes participatory *Mahalla* and resources mapping, urban poor settlements mapping, and institutional and financial capacity assessments. These tools help establish a baseline of the urban poor, collect multidimensional poverty data, promote the participatory assessment of poverty, and contribute to strategic usage of investments to improve the livelihood and living conditions of the cities' urban poor community. An overview of the tools and methods are outlined below:

- Mahalla and Resource Mapping: Mahalla (smallest administrative unit within a ward) mapping is undertaken to generate a more nuanced understanding of the poverty within wards by describing levels of poverty and distribution of services. Data is collected on boundaries of the Mahalla, their geographic location, size, location of infrastructure (educational institutions, recreation facilities, water services, solid waste management etc.), as well as on socio-economic and demographic parameters, to build an MPI of the Mahalla.

- Urban Profiling and Poverty Assessment: Ward Atlas and Urban Poverty Profile are two tools prepared using the participatory poverty mapping approach to understand the overall poverty condition at the ward or city level.
- Urban Poor Settlement Mapping: All poor settlements in terms of income, socio-economic and physical conditions of the settlements, including slums and squatters, are mapped and surveyed to determine their geographic location, size, shape and distribution pattern as well as conditions of various socio-economic indicators related to urban poverty. This helps determine the priority target settlements for the interventions by demarcating the settlement boundaries and collecting data on different poverty indicators for each settlement. (WB, 2009)

Impact/ Outcomes:

- The city-wide Participatory Poverty Mapping (comprising Mahalla and Resource mapping and Urban Poor Settlement Mapping) has been completed in 15 cities/towns in 2019. This mapping has resulted in the formation of city poverty reduction strategies, being implemented in 13 cities/towns in 2019. Institutional and Financial Capacity Assessments (IFCAs) have been undertaken in nine cities, to enable local government to develop local tax revenue strategies aiming to enhance the revenue collection to fund pro-poor urban development. NUPRP has established a grant-based Settlement Improvement Fund (SIF) to support primary infrastructure in low-income settlements (drains, footpaths, latrines, reservoirs, water wells, access road improvements, septic tanks, community resource centres) to meet the priorities of poor and marginalised communities. As of September 2019, a total of 607 SIF contracts based on the CAPs have been developed due to the capacity building provided by NUPRP. Climate Change Vulnerability Assessments with Infrastructure Assessments have also been completed in nine planned cities in 2019 (DFID, 2019).
- Poverty is a multi-generational problem requiring dynamic solutions that ensure a continuous flow of benefits and opportunities. The poor often belong to neglected, vulnerable and marginalised groups in the society, lacking formal representation or community voice. In Bangladesh, the urban poor were left off the development agenda for a long time. NUPRP builds on the idea of empowerment of the poor and their increased participation in the decision-making process. The programme also recognises that local institutions and populations are better suited to identifying their challenges and recommending appropriate solutions. Thus, by ensuring engagements between the community leaders and urban government officials, the programme aims to build long-term relationships and ensure the sustainability of the results for the foreseeable future.

Challenges/ Lessons Learnt:

- The program conducted validation exercises to assess the addressal of challenges faced for updating Bangladesh's poverty maps. These exercises helped provide lessons for future poverty mapping.

Replicability & Sustainability:

- There is a need to make poverty mapping a regular monitoring instrument – for this, it is important to maintain the quality of Census and HIES data; and to ensure that the methodology surpasses on to the next generation.

Fact Sheet:

Thematic area	Poverty Mapping
First-year of the program	2015
Responsible institution	Local Government Division and the Ministry of Local Government, Rural Development & Cooperatives (MLGRD&C)
Target audience	Urban Poor
Coverage	All cities

6. Common Interest Group of Domestic Workers

Summary:

Domestic work is increasingly emerging as an alternative livelihood for poor urban women in Vishakhapatnam and is an important source of regular income. In partnership with MEPMA and Greater Visakhapatnam Municipal Corporation, Dhan Foundation has formed Common Interest Groups (CIGs) of domestic workers intending to increase their earning through upgrading their existing skills and knowledge. (Foundation, 2017)

Objectives:

The programme aims to improve domestic workers' awareness regarding their rights and entitlement around payment, working conditions, and improving their collective bargaining power. It envisages addressing urban poverty through the components of skill-building and livelihoods advancement. This project aims to:

- Provide identity to the servant maids by organising them in CIGs.
- Identify their health issues and work on it.
- Provide and ensure social security

Key Stakeholders:

- Greater Vishakhapatnam Municipal Corporation
- MEPMA
- Domestic workers of Vishakhapatnam
- Dhan Foundation

Implementation strategy:

The process of the formation of the CIG is outlined below:

Social Mobilisation	• Awareness seminars involving domestic workers, Resident Welfare Associations (RWAs), NGOs, other public representatives, and associations on the objectives and outcomes of the project • Survey and online registrations of the 2500 domestic workers to identify opportunities for improving the livelihood prospects • Issuing identity cards to the domestic workers • Formation of CIG – one CIG includes around 50 domestic workers • Capacity building of the CIG and its members
Skill enhancement	• Domestic workers were trained on household management skills including topics such as personal hygiene, developing intrapersonal communication skills, understanding components of the urban meal, managing urban kitchens, serving cooked food in a formal environment, handling domestic pets, and handling kitchen gardens, electricity and electrical appliances and providing first-aid
Ensuring Entitlements	• Health camps are organised for health screening and facilitating access to health insurance • Financial inclusion through opening bank accounts and providing bank linkages

Resource Utilisation:

The project relies heavily on CIGs and includes collaboration and mentorship under various organisations based on the three components mentioned above. Before the formulation of the plan, mapping major livelihoods in the community was conducted in 2015, which triggered the need for the intervention in domestic workers' livelihoods. (Foundation, 2017)

Impact/ Outcomes (Anticipated):

- CIGs can self-sustain and enrich themselves to groom leadership skills in women and graduate them into Civil Society Organisations.
- CIGs go beyond economic health and work towards improving the spheres of health, education, and skill-building to empower women.

Challenges/ Lessons Learnt:

- The time and availability of women participants may pose as a challenge.

Replicability & Sustainability:

- This model shares similar values with DAY-NULM and may be upscaled based on the success it attains.

Fact Sheet:

Thematic area	Social Security of Urban Domestic Workers
First-year of the program	2017
Responsible institution	Dhan Foundation, MEPMA and Greater Visakhapatnam Municipal Corporation
Target audience	Urban Domestic Workers
Coverage	Vishakhapatnam

7. Digitisation of SHG Activities – Multiple Projects (India)

Summary:

DAY-NULM Mission has made substantial progress in mobilising and forming the SHG groups. However, monitoring of the SHGs is noted as a challenge, and there is limited information available on the quality of the SHGs. A study by IFMR Lead in 2013 also noted that record-keeping by the SHGs were weak, and members often lacked access to financial information of the groups (IFMR Lead, 2013). Digitising the SHGs seeks to address these concerns mentioned above.

Objectives:

- Digitisation of book-keeping and monitoring activities of SHGs

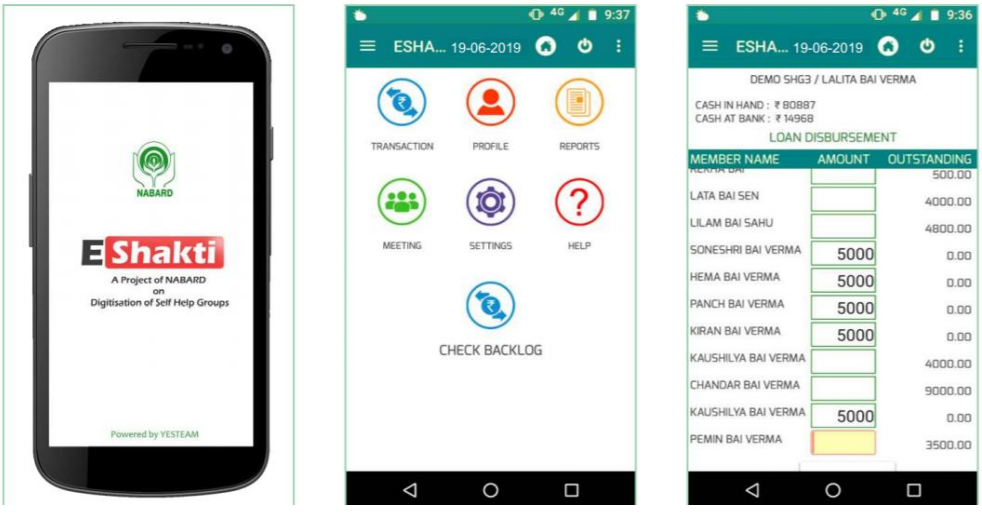
Key Stakeholders:

- NABARD
- MGNREGA
- Jharkhand State livelihood Promotion Society (JSLPS)
- Haryana State Rural Livelihood Mission (HRLM)
- Andhra Pradesh Society for Elimination of Rural Poverty (SERP)
- Self Help Promoting Institutes (SHPI)
- NGOs
- Banks
- SHG Members

Implementation strategy:

There are few initiatives in India under NRLM as well as NABARD that are piloting the digitisation of the SHGs:

- NABARD, through its e-*Shakti* initiative, is digitising the SHGs to capture member-level financial data. The platform provides and tracks detailed information about SHGs' credit and transaction histories, making it easier to grade the SHGs, build credit histories for the members and enable greater access to bank linkage. The project is currently implemented in 250 districts across the country. As on 19th August 2020, the initiative has covered 7.22 lakh groups with over 77.84 lakh women members (NABARD, E *Shakti,* 2020). The platform can also track members and their access to entitlements as it collects data pertaining to Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and *Pradhan Mantri Jan Dhan Yojana* (PMJDY), thus providing a more integrated MIS platform (Singh A. J., 2019).



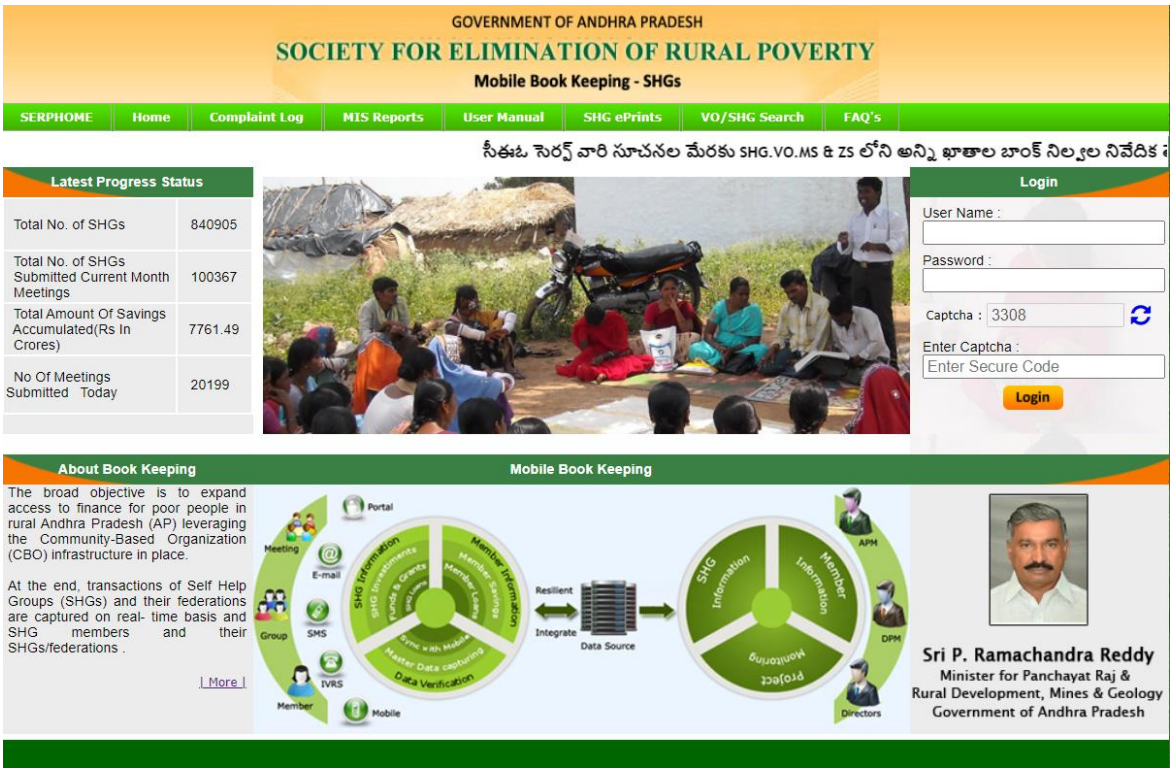
Source: (NABARD, E Shakti NABARD's pilot for Digitisation of Self Help Groups, 2020)

- The 'Tablet Didi' initiative of the Government of Jharkhand equips Community Resource Persons (CRPs) to capture financial records and data at the group level using a digital tablet interface (JSLPS,

2017). The 'Tablet *Didis*' is also an effective mechanism for information dissemination, capacity building and communication - they are provided SIM cards with internet facilities that allow them to send information through SMS and Interactive Voice Response (IVR) to SHG members (Singh A. J., 2019). The data collected by the CRPs are uploaded on the Management Information System (MIS), "Swalekha" of JSLPS.

Source: (Swalekha)

- Haryana State Rural Livelihood Mission (HRLM) has partnered with external Technical Service Providers (TSPs) PaySe solution developed by Nucleus Software to digitise SHG transactions like savings collection, loan repayment collection and repayment to village organisations (MicroSave Consulting, 2020).
- Andhra Pradesh Society for Elimination of Rural Poverty (SERP) Mobile Book-keeping of SHG initiatives captures member-level data through its dedicated mobile and web interfaces on a real-time basis (AP-SERP, n.d.). This includes 'group-level accounts, transactions, operations and credit linkage as well as member-level data on basic demographics and inter-loaning but also member-level social and economic categorisation, savings and borrowings' (Singh A. J., 2019). This information is available in the public domain through http://103.210.74.217/AP/V2_login/Reports/index.aspx



Source: (SERP)

Resource Utilisation:

For NABARD, it extends refinance support of 100% to the financing banks and for awareness creation and capacity building of all stakeholders under the Scheme.

Impact/ Outcomes: (Anticipated)

A recent study by IFMR Lead has identified the following positive impacts of the SHG Digitisation Programmes (Singh A. J., 2019):

- Digitisation programmes like AP SERP result in improved efficiency and transparency in monitoring SHGs while enabling real-time data collection at the group level
- Improved financial linkage of the SHG members with credit bureaus and banks as it can capture member-level credit and financial data
- The data can allow for automatic grading of the SHGs and identification of defunct SHGs
- Improved financial and digital literacy (like in Jharkhand) as well as greater awareness of the social welfare programmes

Challenges/ Lessons Learnt:

- Sourcing information from poor databases, and capturing field level information from SHGs, SHPIs
- Large scale training and capacity building of grassroots-level stakeholders
- Cooperation from banks
- GPRS connectivity (NABARD, E Shakti, 2020)

Replicability & Sustainability:

- Enhanced and coordinated efforts may be necessary to upscale the project and digitise all SHGs throughout India.

Fact Sheet:

Thematic area	Digitisation of SHGs
First-year of the programs	2015-17
Responsible institutions	SERP, NABARD, JSLPS, HRLM
Target audience	SHGs, SHPIs, Banks
Coverage	Andhra Pradesh, Jharkhand, Haryana National (for NABARD)

8. Kenya Jua Kali Voucher Program for Training

Summary:

Kenya Jua Kali (micro and small entrepreneurs) Voucher Program aimed to empower micro and small entrepreneurs with the capacity to buy the training in the open market. It was implemented with funding from IDA.

Objectives:

- To provide skills and technology upgrading for about 25,000 informal sector manufacturing workers;
- To increase the access of informal sector entrepreneurs to services; and
- To improve the policy and institutional environment by removing restrictive laws and policies.

Key Stakeholders:

- Kenya Micro and Small Enterprise Training and Technology Project (MSETTP)
- Ministry of Research, Technical Training and Technology (MRTT&T)
- The World Bank
- Micro and Small Entrepreneurs

Implementation strategy:

The program targeted established entrepreneurs and employees, rather than new entrants to the sector, to assist enterprises with the most potential for growth and employment generation. Other key stakeholders in the programmes were:

- Intermediaries such as allocation agencies who were responsible for marketing, allocating and redeeming vouchers in a decentralised manner. Allocation agencies received a fee equal to three per cent of the value of vouchers issued
- Training providers

The pilot program intended to check the voucher program's effects and test designs to develop effective strategies for a full voucher program. **Salient features of the pilot voucher program were:**

- The pilot was conducted in Nairobi and Machakos;
- The pilot was restricted to general business management and five trades: wood-working, metal-working, food-processing, textiles and motor mechanics;
- Both Jua Kali Associations and NGOs (two of each) were used as allocation agencies for vouchers to test their comparative advantages;
- Under the Project Coordination Office's (PCO's) supervision two special working groups conducted a miniature training needs assessment; this provided guidance on the skills offered in the pilot and compile a directory of training providers eligible for the pilot to facilitate informed choice by beneficiaries;
- The PCO designed the voucher and developed relevant documents describing the pilot voucher program and manuals for each actor for marketing and publicity (Yoon, 1999)

Resource Utilisation:

The Voucher Program is a key component of the Kenya Micro and Small Enterprise Training and Technology Project financed by the World Bank.

Impact/ Outcomes:

Studies indicate that using a voucher mechanism helped stimulate demand for training, technology, and management and marketing consultation among micro and small enterprises in Kenya (Johanson, 2004).

Challenges/ Lessons Learnt:

- Stakeholder involvement in design and implementation was crucial;
- Severe capacity constraints, especially in human resources and infrastructure, were detected (Yoon, 1999)

Replicability & Sustainability:

Stakeholder's ownership of the project through the participatory decision making and transparent process helped sustain the voucher program – continued consultation throughout the project even helped make flexible adjustments to the program. (Yoon, 1999)

Fact Sheet:

Thematic area	Skill Development
First-year of the program	1994
Responsible institutions	MSETTP
Target audience	Students under Skill Development Exercises
Coverage	Nairobi and Machakos (Kenya)

9. Technical and Vocational Vouchers Program (TVVP) in Kenya

Summary:

The Technical and Vocational Vouchers Program (TVVP) was launched in 2008 in Western Kenya (Busia District) to study the effect of vouchers on vocational training programmes' effect and the short-term impact on job seekers' employment choices, jobs and incomes. The Technical and Vocational Vouchers Program collaborated with Youth Polytechnics under the purview of the Kenyan Ministry of Youth, Technical Training Institutes under the Kenyan Ministry of Education, and private vocational training institutions.

Objectives:

- To assess the varying impacts of restricted vouchers that limit vocational education options to public institutions and unrestricted vouchers that allow students to attend either public or private institutions (Joan Hamory Hicks, 2011).

Key Stakeholders:

- Kenyan Ministry of Youth,
- Technical Training Institutes under the Kenyan Ministry of Education
- Private vocational training institutions
- Kenyan youth

Implementation strategy:

A total of 2,163 youth (18-30 years) who were previously part of the Kenyan Life Panel Survey participated in the project. They all applied for training vouchers, but only 50% were randomly awarded vouchers. A random half was awarded a voucher that could only be utilised in public vocational institutions among voucher winners. In contrast, the other half was awarded a voucher that could be used either in both private and public schools. The value of the voucher was approximately US$460 (35000 KES) – which was sufficient to fully or almost fully cover tuition costs for both government and private vocational programs. All major government-owned training institutions and a large number of private training institutions available in the area, including NGO-run and faith-based institutions and private commercial training providers were registered under the programme.

Furthermore, half of the participants in the treatment and control groups were provided with information on the actual returns of vocational training. The intervention also highlighted the increased economic returns in male-dominated trades. It encouraged females to pursue more traditionally male-dominated trades through 'nudge' methods like using a video of female auto-mechanics.

Resource Utilisation:

The program is funded by the World Bank Group (Government agency), Spanish Impact Evaluation Fund (SIEF) (Government agency), World Bank Group (International aid agency), International Growth Center (International aid agency), National Institutes Of Health (NIH) (Government agency), and International Initiative For Impact Evaluation (3Ie) (Non-profit organisation).

Impact/ Outcomes:

The key findings from the randomised evaluation indicated that vouchers that cover program costs do encourage young adults to enrol and that those who can use the voucher for a private training program are more likely to sign up and stay in school (Hicks, 2011):

- 74 per cent of participants who received vouchers enrolled in some type of vocational training, compared with less than 4 per cent of those in the control group
- Participants who received an unrestricted voucher - one that could be used for either a public or private training program - were more likely to enrol and less likely to drop out of a programme than those who received the restricted (public institution-only) voucher
- 79 per cent of people who received the unrestricted voucher attended a vocational training program, compared with 69 per cent of those who received a voucher good only for government-run institutions
- Reduced the level of occupational segregation in the labour market by increasing the uptake of the traditional male trades by women

The programme also noted a positive impact on the supply side. The training institutes which received voucher recipients also increased the course offering and therefore increased the likelihood that youth will find a training provider that matches their interests and aptitude.

Challenges/ Lessons Learnt:

- By nudging women to acquire training in lucrative male-dominated trades, the information intervention may boost the earnings potential for women in vocational training (Joan Hamory Hicks, 2011)

Replicability & Sustainability:

- The scheme serves as a model to demonstrate the potential to reduce the level of occupational segregation in the labour market by improved gender balance in training

Fact Sheet:

Thematic area	Skill Development
First-year of the program	2008
Responsible institutions	The Kenyan Ministry of Youth, Technical Training Institutes under the Kenyan Ministry of Education, and Private vocational training institutions
Target audience	Students under Skill Development Exercises
Coverage	Busia District (Kenya)

10. Vikalp Skill Voucher in Maharashtra

Summary:

The Vikalp Skill Voucher programme, launched in 2013, was piloted in Mumbai and Pune with support from the National Skill Development Corporation (NSDC), Babasaheb Ambedkar Research and Training Institute (BART) Maharashtra, Centre for Civil Society (CCS), and Michael & Susan Dell Foundation. The Vikalp Voucher enables an individual to obtain training from any training institute accredited with the Voucher provider. It offers students the right to choose from skill development programmes based on their aptitude and not on the availability of schemes, courses.

Objectives:

- To obtain training from any training institute accredited with the provider of the voucher, and offer students the right to choose from skill development programmes based on their aptitude

Key Stakeholders:

- National Skill Development Corporation (NSDC)
- Babasaheb Ambedkar Research and Training Institute (BART) Maharashtra
- Centre for Civil Society (CCS)
- Michael & Susan Dell Foundation
- Students

Implementation strategy:

The students can select training courses offered by any of the accredited training institutes based on their aptitude and interest. The voucher also encourages competition among training providers as the students can select the institutes based on the quality of the courses and training outcomes (e.g., placement outcomes). The institutes accredited for the programme had strong track records in terms of performance in placements and certification, reliable infrastructure, and full-time and qualified trainers. Awareness regarding the voucher programme was generated through career *mela.*

Resource Utilisation:

Institutes funded their vouchers in three outcomes-based intervals: upon completion of 10 per cent of the course, upon certification, and upon job placement. Centre for Civil Society was responsible for the enrolment of the student in the elected institute, payment of the Vikalp Voucher, payment of each student's 10 per cent contribution to the training, monitoring of students' progress, graduation and employment placement.

Impact/ Outcomes: (Anticipated)

The programme evaluation points towards the following benefits of the voucher programmes (NITI Aayog):

- Cost efficiency: With CCS responsible for mobilising the students for a wide range of courses and vocational institutes, it resulted in saving up to 50 per cent of the costs incurred by singular skill training institutes focused solely on recruiting their students;
- Improved labour market outcomes: Students who leveraged the voucher model had twice the chance of getting a job compared to their peers; and
- Improved quality of skill training: Evaluation also reported that students made more thoughtful training decisions

Challenges/ Lessons Learnt:

- Students built their economic capacity to pay for the courses using vouchers while also being able to choose the course/ institute of their choice. Therefore, here competition facilitated improved in infrastructure while maintaining the quality of training. This also helped students make informed decisions to access and apply for their choice of employment opportunities. The institutes also maintained the quality of the performance since they were required to earn their vouchers.

Replicability & Sustainability:

The evidence presented in the outcomes demonstrates the success of a voucher program in boosting the demand for vocational training, increasing competition in the training market, translating to a better quality of the training institutes, and improving labour market returns for the students.

Fact Sheet:

Thematic area	Skill Development
First-year of the program	2013
Responsible institutions	NSDC
Target audience	Skill development trainees
Coverage	Mumbai and Pune

11. Online Job Portals – Multiple Projects (India)

Summary:

To facilitate employment opportunities for the migrants returning to cities after the lockdown imposed due to the pandemic, many state governments have developed or are in the process of developing an online platform to register and monitor employment. The online portals across various states focus on bridging the gap between the potential employers and labourers who have returned to their native places in the wake of the Covid-19 situation (The Hindu, 2020).

Objectives:

- To provide information about the nearest employer to those seeking employment within the online portal
- To upgrade skills by providing special training as per job requirements
- To maintain a track record and database to assist in the formulation of improved schemes
- To facilitate as an online employment centre and assure employment opportunities and industrial labour supply during the times of need

Key Stakeholders:

- Government of Delhi
- Government of Madhya Pradesh
- MGNREGA
- Government of Rajasthan
- Employers
- The vulnerable and unemployed population

Implementation strategy:

- The Government of Delhi launched the Rojgar Bazzar Portal (jobs.delhi.gov.in) on 27th July 2020 to create a common online employment platform for job seekers and employers through registration. Jobseekers can register under 32 categories ranging from web designer to housekeeping. The registration process of the jobseeker is authenticated using the OTP process.

  Source: Source: (Delhi)

- Government of Madhya Pradesh launched the Pravasi Sharmik Portal and Rojgar Setu Portal to bring the migrant labourers and employers/job providers (i.e., MSME industries, factories, commercial establishments, institutions, contractors, builders, shops and placement agencies) on a common online platform so that the employers could choose the workforce as per their requirement. The workers can seek jobs according to their existing skills and efficiency. 'Rojgar Setu portal' is also instrumental in setting up 'Rojgar Melas' for the employers and workers at the district level. Skill mapping is done by analysing the information provided by the workers on 'Skill mapping forms'. These forms collate information from the migrants on their educational skills, work experience at the time of registration on the 'Rojgar Setu portal' or 'Shramik Sewa'. The government is also aiming to upgrade the registered migrant workers' skills as per the skill mapping data generated online. The 'Pravasi Shramik Portal' integrated database is also being used to link the unskilled labourers with MNREGA scheme for employment opportunities.

Source: (Pradesh, Rojgar Setu Registration)

- The Labour Ministry of the Government of Rajasthan launched the Raj Kaushal Portal to create a centralised workforce repository to connect migrant workers with job opportunities in their home state. A mobile application is in place to facilitate the self-registration of the workers. The users must sign up using their mobile number and verify with an OTP.

Resource Utilisation:

Online Job Portals help digitise an already present ecosystem of employer and employee to enhance the visibility of those in need and those who can provide the service.

Impact/ Outcomes:

- As per the data released by Government of Delhi, at least 10 lakh jobs have been offered by the first week of August, and over 6,000 companies are registered on the portal to advertise. These companies include Reliance, Amazon, HDFC Bank, Aditya Birla Group and Assam Tea. The web portal displays nine lakh vacancies which are still open for applying.
- As per the Pravasi Shramik Portal, a total of 7.30 lakh migrant labourers are registered. Furthermore, a total of 13,10,186 beneficiaries including migrant workers and their family members have been provided free ration under the India Self-Reliant Scheme/NFSA, and 3,24,715 workers have been linked to the 'Sambal Yojana' based on the eligibility and skills of the migrant workers. An estimated number of 15,722 workers have been employed in the schemes of Madhya Pradesh Building Construction Board.
- The Raj Kaushal web portal has a database of 52 lakh labourers which includes 13 lakh migrant labourers along with the details of their skills. This includes a total of 13.14 lakh migrant workers, 22.33 lakh registered construction workers, 3.38 lakh Rajasthan Skill and Livelihood Development Corporation-trained individuals and 1.21 lakh ITI-trained individuals, amongst others. The details of the industries, along with their registration numbers and vacancies, are also available on the portal (Government of Rajasthan, 2020). There are 11.19 lakh employers registered on the portal (IANS, 2020).

Challenges/ Lessons Learnt:

- Technological barriers such as access to internet and information portals exist which restrict the objectives of the portals.

Replicability & Sustainability:

- Providing employment services in the form of hosting labour exchanges and matching firms with workers seeking employment could help address information and coordination-related challenges in the labour markets. Evidence indicates that online job portals (especially at local levels) effectively bridge the gap between employers and job seekers by providing vacancy announcements for both the formal and informal sectors and help expand access to job information for those with internet connectivity. Furthermore, the data from the online portals can also provide insights on employers' demand for skills as well as data on job seeker characteristics. The real-time analysis of the website's data can also help capture emerging trends in labour market dynamics and demand for skills. The online job portals can also facilitate demand-driven training by identifying skills deficits and linking it effectively to training programmes.

Fact Sheet:

Thematic area	Online Job Portals
First-year of the program	2020
Responsible institutions	Government of Delhi Government of Madhya Pradesh MGNREGA Government of Rajasthan
Target audience	Employers The vulnerable and unemployed population
Coverage	Delhi, Madhya Pradesh, Rajasthan

12. Colombia Workforce Development Social Impact Bond (SIB) – Empleando Futuro

Summary:

Launched in 2017, this SIB aimed to provide skills training and employment support to vulnerable, unemployed individuals in Bogotá, Cali, and Pereira. Outcome payers/ funders include *Prosperidad Social*, Colombian National Government; Inter-American Development Bank (IDB) – Innovation Lab channelling funds from the Swiss Confederation State Secretariat of Economic Affairs (SECO).

Objectives:

- To achieve 3-month retention in a formal job for the vulnerable unemployed population.

Key Stakeholders:

- Prosperidad Social, Colombian National Government
- Inter-American Development Bank (IDB) - Innovation Lab, channelling funds from the Swiss Confederation State Secretariat of Economic Affairs (SECO)
- Kuepa, Fundación Colombia Incluyente
- Corporación Volver a la Gente
- Fundación Carvajal
- Fundación Mario Santo Domingo
- Fundación Corona
- Fundación Bolívar Davivienda
- Instiglio (SIB design)
- Fundación Pro Bono
- Baker McKenzie
- Durán & Osorio
- Deloitte
- Vulnerable individuals not formally employed

Implementation strategy:

The SIB supported a range of employment measures, including skills training, psychosocial support, and intermediation services for job placement and 3-month retention. It financed these outcomes for up to 766 vulnerable individuals. The service targeted individuals not formally employed at the start of the program, aged 18-40, who scored below 41.74 on the Beneficiary Selection System for Social Programs (SISBEN), were registered on Red Unidos or were victims of displacement due to armed conflicts. Moreover, the candidates should not have participated in Prosperidad Social's employment programs in the last two years. Payments to providers were weighted as follows:

- Job placement, for which providers receive 50 per cent payment per capita
- Three months retention, for which providers receive the remaining 50 per cent payment per capita;
- Six months retention, resulting in a 10 per cent bonus payment

Resource Utilisation:

The investors include *Fundación Mario Santo Domingo, Fundación Corona, and Fundación Bolívar Davivienda and the service providers are Kuepa, Fundación Colombia Incluyente, Corporación Volver a la Gente,* and *Fundación Carvajal.* Outcome payers committed COP 2.2 billion (approximately US$ 0.76 million) for outcome payments – this amount corresponds to the funding tied to results.

The figure provides an overview of the stakeholders and their role in SIB:

Source: (SECO Economic Cooperation and Development)

Impact/ Outcomes: (Anticipated)

Out of a total of 1,855 people who received the labour intermediation, 46 per cent (899) were placed in formal jobs. Of the people who got a job, 79 per cent of the employed beneficiaries retained their jobs for at least three months and 34 per cent for six months and more. There were positive returns for investors, and the IRR was 8.2 per cent before inflation. (Instiglio, Results-based Financing to Enhance the Effectiveness of Active Labor Market Programs, 2018).

Challenges/ Lessons Learnt:

- The deployment of the second SIB served a challenge of familiarity. There was a strong relationship with local authorities at the time of first SIB. Therefore, the set-up of the second SIB followed the approach of testing the model with a sub-national government as a strategic method to develop the necessary ecosystem (SECO Economic Cooperation and Development).

Replicability & Sustainability:

- In Colombia, the SIB programme aims to sustain for further five years and aims to implement several SIBs with two additional market-building and learning dissemination components. The goal is to run at least 3 SIBs on the same target group as this programme to build a replicable model with entered feedback through piloting processes and build a market of service providers (SECO Economic Cooperation and Development).

Fact Sheet:

Thematic area	Skills training and employment
First-year of the program	2017
Responsible institutions	Prosperidad Social, Colombian National Government; Inter-American Development Bank (IDB) - Innovation Lab, channelling funds from the Swiss Confederation State Secretariat of Economic Affairs (SECO)
Target audience	Vulnerable unemployed population
Coverage	Bogota, Cali and Pereira

13. Village Enterprise Development Impact Bond for Poverty Alleviation (Kenya and Uganda)

Summary:

The Village Enterprise Development Impact Bond (DIB) intends to improve income levels of the extreme poor (income of less than $1.90 per day) through Village Enterprise's microenterprise development program for the extreme poor, known as a Graduation program. Outcome payers include the Department for International Development (DFID), Development Innovation Ventures division of United States Agency for International Development (USAID) and an anonymous philanthropic fund based in the USA. The service provider is the Village Enterprise, and the investors include Delta Fund; The Halls Family; Impact Assets [gathering three private investors, including Silicon Valley Social Venture Fund (SV2)]; Jay Friedrich; Brian Lonergan, The Laidir Foundation; and Bridges Impact Foundation. Total budget committed by outcome-payers is USD$ 5,280,642 while the payment to Village Enterprise based on results is around USD$ 4,280,618.

Objectives:

- To prove the impact of a multi-country and multi-context intervention
- To explore the effects of outcome-based versus traditional funding
- To develop adaptations of the model for cost-effectiveness (Enterprise)

Key Stakeholders:

- USAID Development Innovation Ventures (DIV)
- UKAID (DFID)
- The Global Development Incubator
- Instiglio
- IDinsight
- Village Enterprises

Implementation strategy:

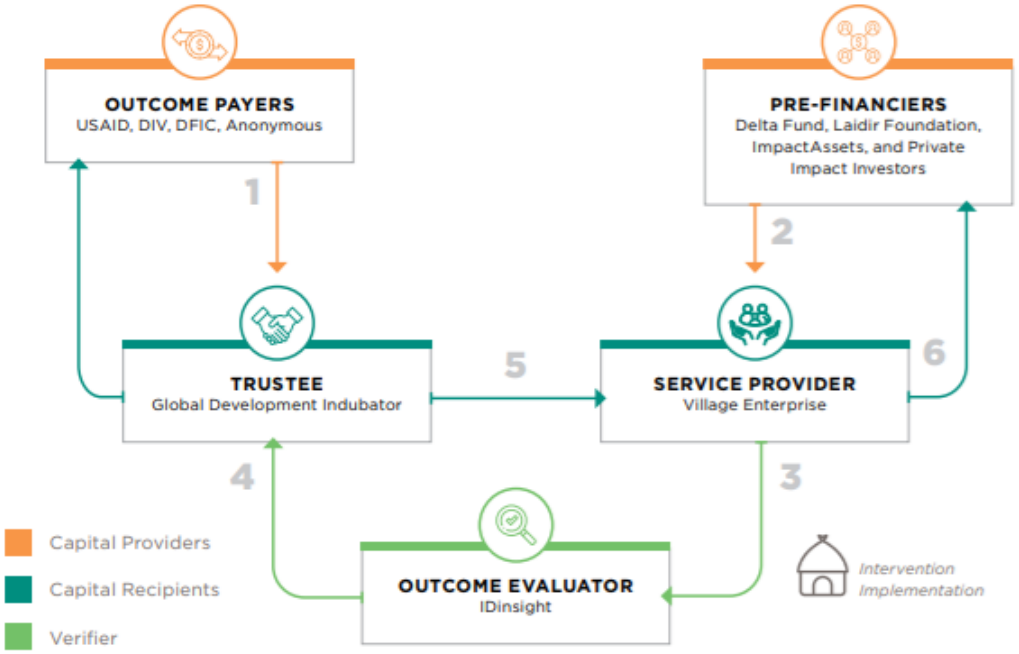
The Village Enterprise Development Impact Bond (DIB) microenterprise development programme seeks to improve the income levels of at least 12,660 extremely poor households in rural Kenya and Uganda by creating over 4000+ sustainable microenterprises. There are five components to the programme: targeting, business savings, training, seed funding and mentoring:

- Targeting: Beneficiaries for the programme are identified through a combination of community-based Poverty Wealth Ranking exercise coupled with Gramee's Progress-out-of-Poverty Index
- Business Saving Groups (BSGs): BSGs are formed at the beginning of the training, consisting of 10 businesses comprising 30 individuals, each BSG with its constitution. BSGs create the platform through which Village Enterprise carries out the training program, as well as develop trust and respect between the participating community members
- Training: Mentors deliver a four-month training program to equip participants with the necessary knowledge to run a business
- Seed funding: A seed capital is granted to start businesses of 3 participants. Approximately 65% of businesses will receive a $50 seed with the remaining 35% receiving $150. The capital investment is a grant, rather than a loan
- Mentoring: Mentors provide continuous guidance to the participants for one year

Outcome payments are tied to the RCT conducted by IDInsight, with VE being paid approximately $1 for every $1 increase in household income. Household income will be measured against consumption and assets.

Resource Utilisation:

Village Enterprise is supported by various individuals, foundations, organisations, corporations and religious institutions (Enterprise). The figure below presents the structure of the stakeholders in the impact bond:



Source: (Village Enterprise)

Impact/ Outcomes: (Anticipated)

The Village Impact Report 2020 preliminary findings of the impact of the bonds (Village Enterprise, 2020):

- The bond has started 3,939 small businesses and trained over 11,800 people living in extreme poverty
- Monthly per capita consumption increased by 113% and asset stocks more than doubled among households
- Positive improvements in the quality of businesses started through the DIB was also reported

Challenges/ Lessons Learnt:

- The model adopts a strong feedback system in its implementation to constantly overcome any challenges and constantly evolve. With the availability of monitoring dashboards for businesses and savings groups, the challenges are identified timely and acted upon. (Village Enterprise)

Replicability & Sustainability:

- The project is constantly evolving and finding avenues for replication and up-scaling. With the implementation in different countries and contexts, it has successfully created a demonstration project on learning to scale up a graduation model 'while ensuring the quality of implementation at scale'. (Enterprise)

Fact Sheet:

Thematic area	Village Enterprise Upliftment
First-year of the program	2017
Responsible institution	Village Enterprise
Target audience	Rural enterprises and businesses
Coverage	Soroti and Amuria districts in Uganda and Kitale and Bungoma districts in Kenya

14. CSR Portals – Multiple Projects (India)

Summary:

Several State governments and projects play a facilitating role and create a platform or use existing CSR portals for directing private funding to city/state initiatives. This ensures transparency and accountability in the transfer of funds towards the initiatives.

Objectives:

To establish CSR Portals to facilitate, direct and track private funding through CSR to relevant initiatives.

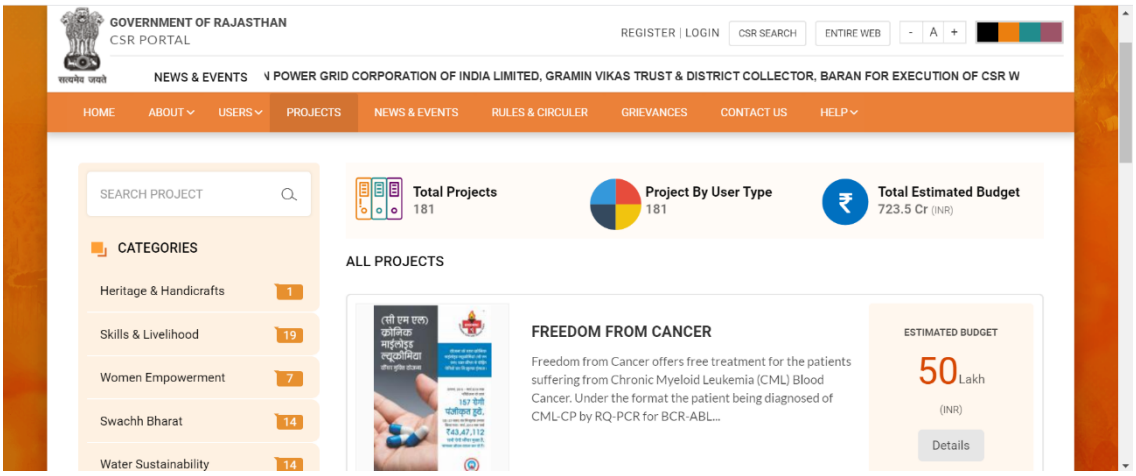
Key Stakeholders:

- School Education Department of Government of Telangana
- Government of Rajasthan
- Government of Uttarakhand
- Government of Madhya Pradesh
- Government of Odisha
- Private Corporations
- Individual Donors
- Implementing Agencies
- SBM-U

Implementation strategy:

Some of the state/national level initiatives are outlined below:

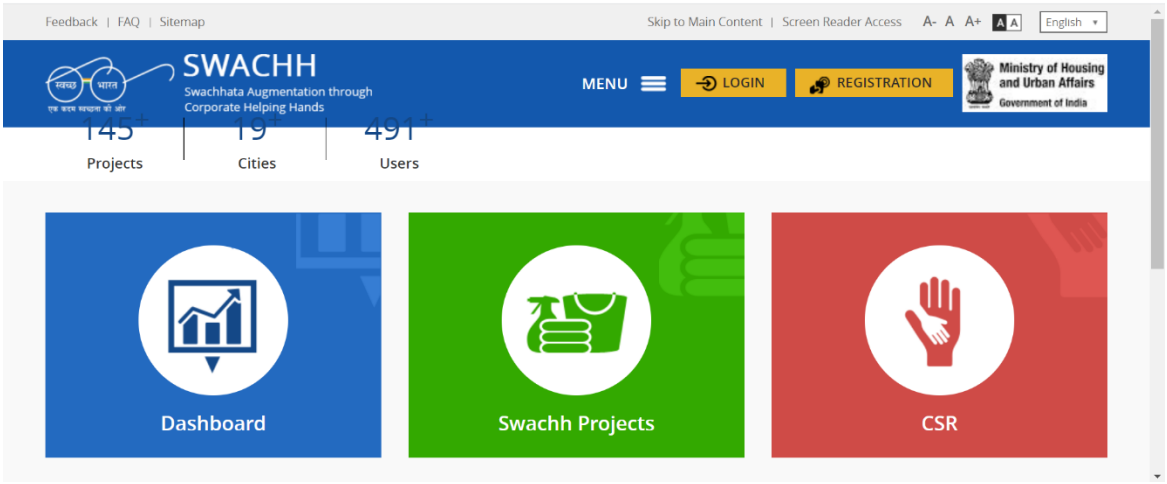
- The School Education Department of Government of Telangana has recently launched a CSR portal (https://csrisredu.telangana.gov.in/home.htm) to synchronise the government and CSR initiatives towards creating more amenities and enhancing the quality of education in public schools. Private companies can contribute in cash and kind towards building school infrastructure, digital education, ICT facilities or science labs, water and sanitation facilities, transport, green spaces/playground, sports, hostels etc.
- Government of Rajasthan has a CSR portal (https://csrrajasthangov.in/) that seeks to 'identify and list projects and programmes of the State Government and monitor and evaluate the progress in sourcing and channelising the CSR Funds to the projects/programmes of the State Government' (Government of Rajasthan). Furthermore, Government of Rajasthan has a sector-specific CSR portal Gyan Sankalp (https://gyansankalp.nic.in/Home/HomePage.aspx) which seeks to systematically address the education funding gap by linking government initiatives to individual/CSR donors who can directly support the government in these initiatives.



Source: (Government of Rajasthan)

- Sahyog (https://csr.uk.gov.in/index.aspx) is the CSR portal launched by the Government of Uttarakhand to act as a one-stop solution for stakeholders involved in CSR-related activities in the state.

- Government of Madhya Pradesh has developed a CSR portal (http://csr.mp.gov.in/) to allow stakeholders to collaborate in CSR activities. It provides a list of the companies interested in CSR activities, identifies projects for investment, and provides an update on the ongoing and completed CSR activities.
- The CSR portal of Government of Odisha (https://csr.odisha.gov.in/Default.aspx) guides the corporates about the human development indices and priority gap areas for various sectors. It collates and provides information on the government's requirements, implementing agencies, preferences and interest of the companies, status of the projects and success stories.
- At the national level, SBM-U has developed a 'crowd-funding platform to spearhead involvement of private sector in city-level initiatives of Swachh Bharat Mission (SBM)' called SWACHH (https://swachh.org.in/index.htm). The platform's main objective is to connect municipal bodies with private individuals and companies for city-level SBM projects of building toilets and solid waste management infrastructure/services. The platform also has a monitoring mechanism which lists the projects from conception to completion stage, showcased with stage-wise progress of projects and utilisation of funds.



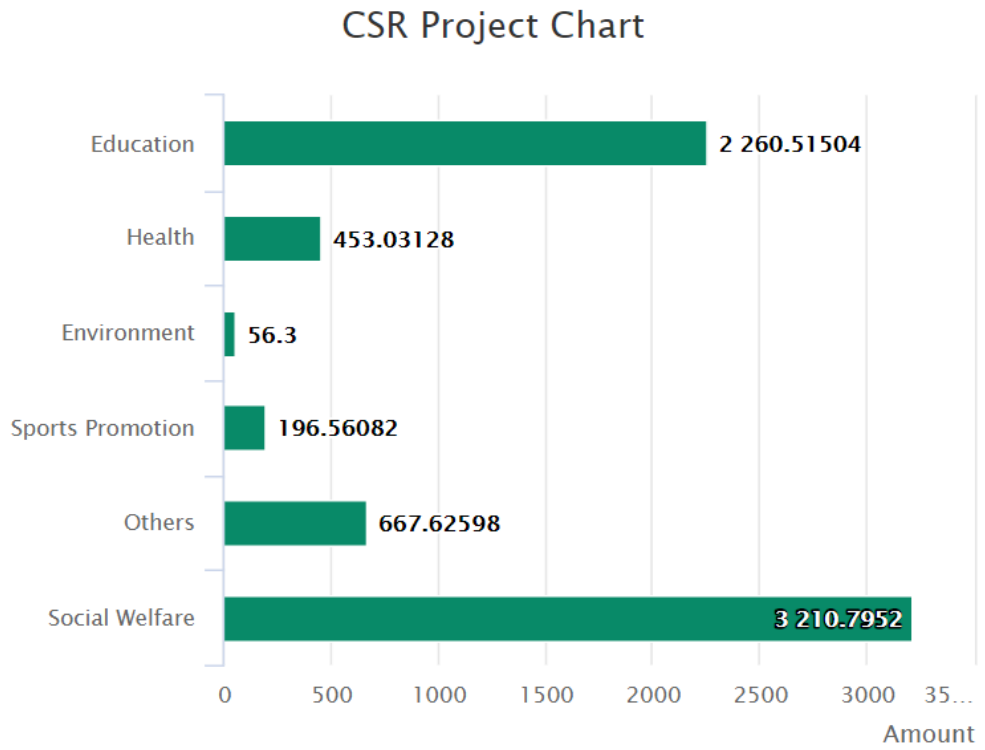
Source: (SBM-U)

Resource Utilisation:

CSR Portals prove to be hands-on tools to bring forth priority areas at the State and the National level for the generation of finances.

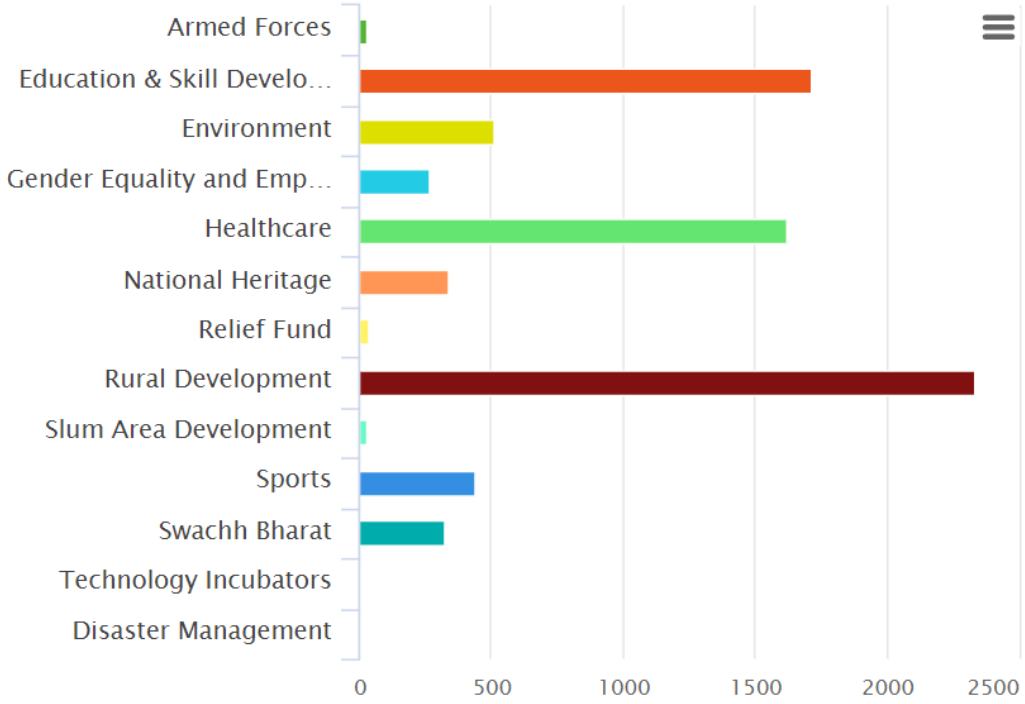
Impact/ Outcomes:

- For Telangana, as of August 2019, donations worth more than Rs. 7 lakh were received through the portal within a month of the portal's launch (Yuvraj Akula, 2019). The funds have been provided for development, including providing infrastructure, laboratories, toilets and drinking water facilities, among others in government schools (ibid).
- The CSR portal for Rajasthan presents 181 running projects with an estimated budget of Rs. 733.5 Crore.
- Currently, Sahyog, the CSR Portal for Uttarakhand presents 39 running projects with 41 registered donors.
- The CSR portal for Madhya Pradesh presents 170 projects with an estimated budget of Rs. 6845 Lakh. The figure below depicts progress made by Madhya Pradesh.



Source: (Pradesh, About CSR Portal)

- Currently, CSR portal for Odisha presents 7782 projects with an estimated budget of Rs. 274990 Lakh. The figure below depicts the progress made by Odisha.



Source: (Odisha)

- The SWACHH portal currently presents 145+ projects with 491+ users.

Challenges/ Lessons Learnt:

- Provide ground-level data to make informed decisions.
- Create structures to build capacity for operation and maintenance.
- Constantly reassess and adapt to the changing needs of the ground and the donors. (Walker, 2020)

Replicability & Sustainability:

- As long as there is a feedback loop from ground realities and donor presence, these CSR Portals can prove to be an efficient system for a streamlined flow of private funds towards development actions. (Walker, 2020)

Fact Sheet:

Thematic area	CSR Portals
First-year of the program	2017-2020
Responsible institution	Several State Governments, SBM-U
Target audience	Private Corporations Individual Donors Implementing Agencies
Coverage	Telangana, Rajasthan, Madhya Pradesh, Odisha, Uttarakhand National (for SBM-U)

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