

Karnataka Urban Development and Coastal Environmental Management Project

DESCRIPTION

The Project will support the Government's priority investment in the urban sector, based on an urban sector development strategy that focuses on improving the welfare of the urban poor and the devolution of municipal management responsibility from states to urban local bodies. This integrated urban development project will help meet basic human needs by developing urban services for water supply and sanitation, solid waste and wastewater management, and slum and environmental improvements. The Project will also support street improvements and traffic management, and strengthen other municipal services required to improve the quality of life in urban areas. The Project will provide assistance in capacity building and community participation at the state and local levels and in Project implementation.

PROJECT AREA

The project is being implemented in the following selected urban centres in the three coastal districts of Karnataka:



A. Dakshina Kannada district

1. Mangalore
2. Ullal
3. Puttur

B. Udupi district

1. Udupi
2. Kundapura

C. Uttara Kannada district

1. Karwar
2. Ankola
3. Bhatkal
4. Dandeli
5. Sirsi

TOWN WISE POPULATION

Sl. No.	Town	Population		Area in Sq. Kms.)
		Existing 2001	Projected 2026	
1	Mangalore	415272	676788	132.82
2	Ullal	49862	84864	11.00
3	Puttur	48063	63967	34.00
4	Udupi	113039	170180	65.08
5	Kundapura	28595	43049	15.00
6	Karwar	62960	99564	27.15
7	Ankola	14306	26362	7.42
8	Bhatkal	58711	136420	12.48
9	Dandeli	31785	74651	5.57
10	Sirsi	53287	102842	9.50
		875880	1478687	320.02

COMPONENTS

Part A: Capacity Building, Community Participation and Poverty Alleviation

- Training and technical assistance to urban local body staff
- Community awareness and participation programme
- Slum improvement and sites and services for low income groups

Part B: Water Supply Rehabilitation and Expansion

- Rehabilitation of existing water supply systems
- Providing new water supply schemes to increase the capacity and supply levels
- Leak detection and rectification
- Promotion of cost recovery

Part C: Urban Environmental Improvement

- Waste water management
 - Under ground drainage
 - Sanitation
- Storm water drainage
- Solid waste management
 - Land fill
 - Vehicles
 - Awareness
- Community involvement
- Traffic Management
 - Roads

- Junction improvement
- Rehabilitation of existing markets and other municipal facilities

Part D: Street and Bridge Improvement-Improvement of existing roads

- Construction of new roads
- Associated road side drainage works

Part E: Coastal Environmental Management

- Preparation of coastal resource management and conservation plans
- Industrial pollution control and environmental monitoring programme
- Urban water front rehabilitation plan for Mangalore
- Coastal erosion prevention through mangrove afforestation

Part F: Implementation Assistance

- Support for systematic implementation of the project by appointing consultants for design, construction, supervision and project management and procuring necessary equipment and vehicles

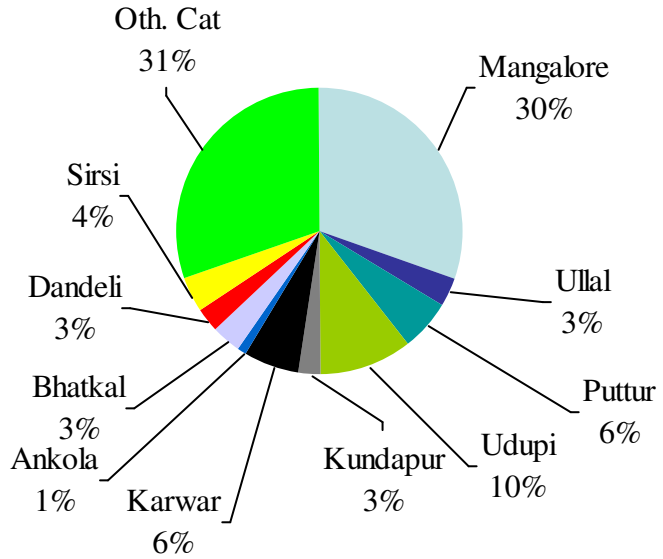
TOWN WISE AND COMPONENT WISE INVESTMENT

Table – townwise & componentwise investment to be included.

Component / Town	WS	UGD	SWD	SWM	SLI	MSF	Roads	LCS	OSS	Total
Kundapura	142.76		6.95	25.80	0.17	17.33	42.58	4.31	1.11	241.02
Mangalore	1020.94	1551.27	27.96	161.35	20.00	0.95	112.00	21.33	4.30	2920.11
Puttur	254.90		17.65	29.45	1.95	33.77	137.97	5.96	1.11	482.76
Udupi	549.49	250.07	17.61	65.01	0.55	22.28	50.20	11.67	1.11	967.99
Ullal	160.50		4.95	10.48	2.20	26.54	54.33	12.00	0.00	271.00
Ankola	22.10		9.19	6.81	4.70	13.64	55.53	5.02	0.00	116.99
Bhatkal	76.99	121.29	10.12	6.61	0.64	18.48	67.37	2.85	1.11	305.46
Dandeli	27.14		31.83	13.08	2.83	46.48	123.98	11.66	1.11	258.11
Karwar	258.42	63.27	15.58	23.94	6.10	13.68	201.40	5.47	1.11	588.98
Sirsi	190.41		32.44	23.66	2.84	18.21	104.49	10.25	1.11	383.41
Total	2703.64	1985.91	174.28	366.20	41.98	211.36	949.84	90.53	12.09	6535.83

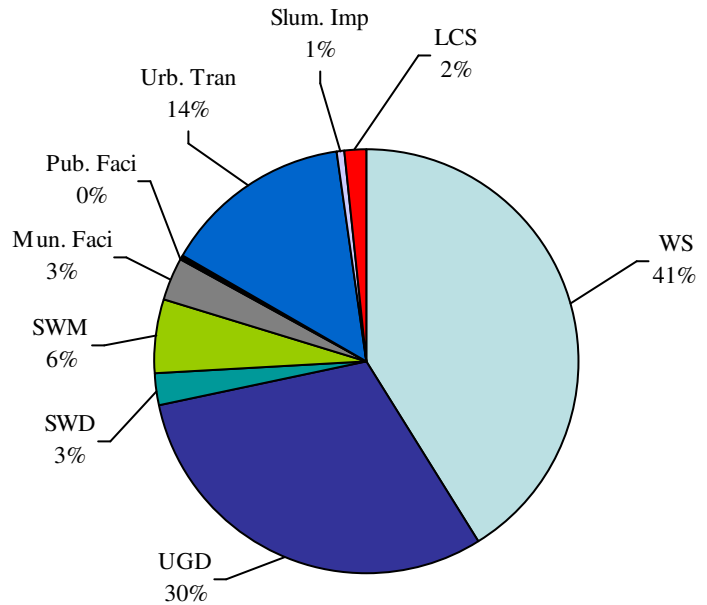
Overall Investment

Town / others	Rs in million
Mangalore	: 2920.11
Ullal	: 271.00
Puttur	: 569.78
Udupi	: 967.99
Kundapura	: 241.02
Karwar	: 588.98
Ankola	: 116.99
Bhatkal	: 305.46
Dandeli	: 258.11
Sirsi	: 383.41
Other categories	: 2908.02
Total	9873.28



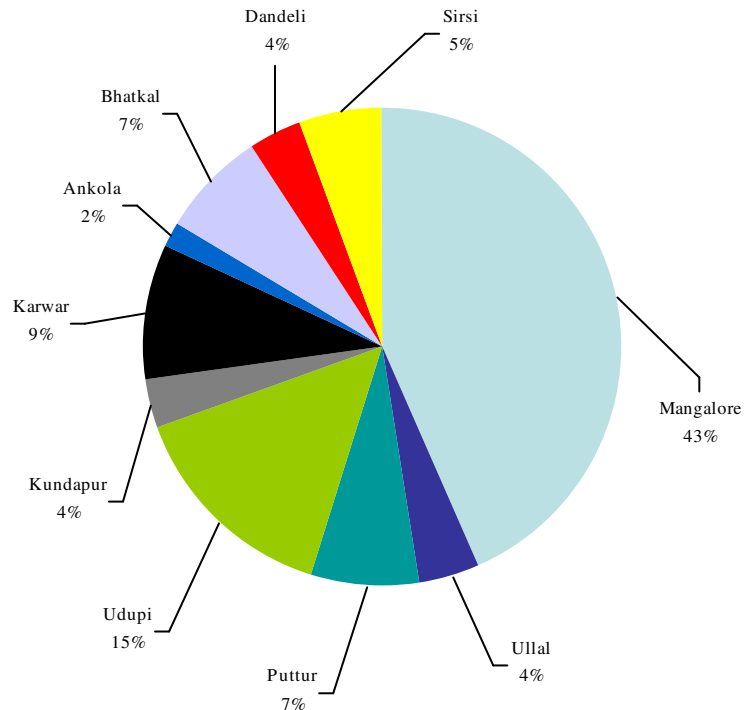
Component wise investment

Component	Rs in million
Water supply	: 2703.64
UGD	: 1985.91
SWD	: 174.28
SWM	: 366.20
Municipal facilities	: 199.51
Public conveniences	: 11.85
Urban transport	: 949.84
Slum improvements	: 41.98
LCS & OSS	: 102.63
Total	6535.83



Town Wise Investment

Town	Rs in million
Mangalore	: 2920.11
Ullal	: 271.00
Puttur	: 482.76
Udupi	: 967.99
Kundapura	: 241.02
Karwar	: 588.98
Ankola	: 116.99
Bhatkal	: 305.46
Dandeli	: 258.11
Sirsi	: 383.41
Total	6535.83



BENEFITS AND BENEFICIARIES

Of the total urban population in the ten Project towns, estimated to be more than 1.2 million in 2006 (the year after full completion), 85 percent will benefit from improved water supply; about 50 percent from improved solid waste management; about 40 percent from better sewerage facilities; and about 25 percent particularly poor families in low-lying areas, from improved drainage. Slum improvements will substantially improve the health and living conditions of more than 30,000 residents. Women and children, comprising more than 65 percent of the beneficiary population will enjoy better and healthier lives as a result of the Project improvements.

PROJECT COST

The total cost of the Project, including physical and price contingencies, duties, taxes and interest and other charges was estimated to be Rs 1056 crores (\$251.4 million at 1\$=Rs 42) for the ten coastal towns of Karnataka. The original loan amount from ADB was \$175 million which was subsequently reduced to \$145 million. Based on the reduced loan the present project cost is Rs 987.3 crores (\$221.4 million at 1\$=Rs 44.6 **as on 31 March 2006**). The cost of the Project is to be met out from the

proceeds of the loan from ADB & contribution from GOK. The total loan taken by GOI from ADB is \$ 145 million at 6% interest rate. The Government of India will be passing on this amount to GOK at approximately 70% as loan and 30% as grant while bearing the exchange rate rise over the 25 years of the loan repayment period. GOK would add its contribution and pass it on to the ULBs in a mix of loan and grant which depends on the nature of the subprojects. The criteria for split up of loan and grant is governed by the nature of the works that would be taken up. Revenue-generating projects such as commercial complexes and markets will be financed as loans and payment based projects such as water supply and UGD will be financed in a mix of loan and grants. All the non-revenue generating projects such as roads and slum improvement will be financed as a grant. On the whole, about 60% of the funds would be made available to the ULBs in the form of grants, which the ULBs will not have to pay back. The grant portion will be varying in the different project towns based on the above-mentioned criteria.

GENERAL

Environmental Management

In order to have an integrated management and sustained development of coastal area, a Coastal Environmental Monitoring & Research Cell to take up study and research on the state of coastal environment, is being proposed to be set up by the Karnataka State Pollution Control Board (KSPCB), which is the regulatory and pollution control law enforcing authority in Karnataka. KUIDFC is considering such ventures keeping its commitment for the environment.

National Parks & Wildlife

National parks and Wild Life sanctuaries are homes to rare and endemic flora and fauna. The project proposes to conserve, protect and develop the habitat while creating and developing eco-tourism facilities. Improvement of National Parks and Wild Life Sanctuary is also planned in conjunction with Department of Forests, Ecology and Environment.

Mangrove Rehabilitation

Mangroves are the unique ecosystems rich in nutrients, highly productive and suitable as habitat for the fishes, prawns and other marine life forms on which livelihood of coastal people depends upon. The area under mangroves is getting reduced causing threat to the very survival of the mangrove species. Mangrove Rehabilitation and coastal plantation programs have been initiated by the Department of Forests, Environment and Ecology.

Eco-Tourism

The coastal districts of Dakshina Kannada, Udupi and Uttar Kannada form vital tourist attraction. Due to non-development of adequate tourist infrastructure, the region has always remained underdeveloped. It is proposed to promote the region and create necessary tourism infrastructure, promote awareness among the people as to the importance of conservation of wildlife for maintaining ecological balance. KUIDFC plans to address the related issues in this area in association with the Department of Tourism.

Capacity building

Both the ADB assisted projects envisage long term plans to have positive impact on the sustainability of the investments made in coastal towns and strengthen the administrative, financial and service delivery mechanism towards better urban living. As one of its main objectives, it continues to build capacity of Urban Local Bodies by enhancing the abilities of city managers who deal and work with citizens by organising comprehensive training programs to focus on up-gradation of skills and attitudinal changes. The Training and Capacity Building Cell (TCBC) in the organisation has so far organised training for about 4300 ULB officials on various aspects of administration, attitudinal and behavioural changes and specialised programmes like municipal accounting and budgeting; governance, energy efficiency, financial management. In addition, 53 officers in KUIDFC have attended refresher courses in legal and practical aspects of managing contracts, procurement procedures of World Bank, business laws, finance, computer aided project management techniques and urban drainage management to name a few.

Community Development Programme

Economic development brings about structural changes in the community and society. As cities and urban centres grow, only small privileged sections of the society benefit from development whereas, majority are deprived, marginalised and remain vulnerable. Slums and urban poverty is a growing reality and cannot be wished away. Urban poverty and problems of the slums remain at large. Therefore, these problems require connected solutions, which in turn require connected people.

Improving the quality of the physical environment in slums is as much about removing obstacles for urban poor. When people have security where they live, when people are released from the cycle of poverty, they begin to have time and energy to think in long term perspective. When people appreciate their place, they are more likely to take care of it. It is

possible that slums may develop into clean green urban villages that have a distinctly different quality from other urban areas.

Slum dwellers are capable of making their own decisions and therefore benefits of community involvement and process are many which go beyond acquiring appropriate services and developing a sense of ownership. Urban poor cannot pay for various services and therefore only minimum standards of service such as lower number of streetlights per kilometre of road; smaller diameter of sewer pipe per population etc are provided in these areas. Many a times, basic services are not found. Maintenance of sub standard services or no services with poor durability become a huge burden for urban poor communities. A city or urban centre is made up of diverse communities tied together into a particular pattern having complex physical and cultural linkages. Approach to slum development and urban poverty that concentrates on upgrading individual slums denies these connections. Slums and urban poor need not be seen as separate from the problems of the city or more commonly as a cause of the city's problems. They should be integral part of the city.

IMPLEMENTATION ARRANGEMENTS

Executing Agency	-KUIDFC
Policy Decisions	-Government of Karnataka
Empowered Committee	-For all decisions regarding Project
Project Director, PMU	-Managing Director, KUIDFC
Deputy Project Directors	-Mangalore & Karwar
Project Implementation Units	-
At District Level	Project Advisory Team headed by DC District NGO forum
Implementing Agencies	

CONSULTANTS : *Pls add the addresses*

Project Management Consultants (PMC)

Project Management Consultants assist PMU in project management and all technical issues. They will oversee all the construction and quality assurance aspects.

- M/s. Black and Veatch (International)

Design and Supervision Consultants (DSCs)

The Design and Supervision Consultants (DSC) are for preparation of detailed project reports, construction supervision and quality assurance.

- M/s. Dalal Consultants and Engineers Limited
(Package -1- Mangalore, Ullal, Puttur, Udupi & Kundapura)
- M/s. Consulting Engineering Services
(Package – 2- Karwar , Ankola, Bhatkal, Dandeli & Sirsi)

Water supply

a. Mangalore & Ullal

A comprehensive combined water supply scheme is planned for Mangalore and Ullal to give an additional 80 mld of water. The scheme contains a new intake well, a new treatment plant of 80 mld capacity and clear water mains – common for Mangalore and Ullal. Apart from this, 13 over head tanks (OHTs), four ground level reservoirs (GLRs) and one sump with four new intermediate pumping stations (IPS) will be constructed in Mangalore and additional pipe lines of 800 km length is proposed to be laid. Ullal will have four new OHTs, one GLR and two intermediate pumping stations. With this, the water supply for Mangalore will increase from the existing 97 lpcd to 135 lpcd. The water supply for Ullal will increase from the existing 27 lpcd to 135 lpcd.

b. Puttur

A new water supply scheme is being executed for Puttur with a provision to construct one additional vented dam across Kumaradhara River, a new intake and jackwell, water treatment plant (WTP), three OHTs, one mini water tank, one intermediate pumping station and around 200 km of new pipe line. The water supply for Puttur will increase from the existing 12 lpcd to 135 lpcd. The water supply augmentation works taken up at Udupi include construction of a new vented dam across river Swarna, one new jackwell and WTP, seven OHTs, three GLRs, one IPS and around 425 km of pipe line. Consequently, water supply in Udupi will increase from the existing 50 lpcd to 135 lpcd.

c. Kundapura

A new water supply scheme is being executed for providing treated water to Kundapura town. The new scheme includes construction of a jackwell,

a WTP and around 60 km of new pipe lines. It is expected that the water supply in Kundapura would increase from the existing seven lpcd to 135 lpcd.

The project covers rehabilitation of various components in the existing water supply systems of all the project towns and provision of stand posts for the benefit of urban poor. The implementation of the project would ensure supply of treated water as per the norms in all the project towns.

d. Karwar & Ankola

For Karwar and Ankola, the present source of supply is from Gangavali River at Honnahalli, which is situated at 42 km from Karwar town. The existing beneficiaries are Karwar and Ankola towns, BILT, Karwar Port, enroute villages and naval base (partially). The existing scheme, commissioned in 1975, was designed for a capacity of 40.90 MLD, which, however, yields only 20.00 MLD due to heavy leakages in the PSC gravity main of about 42 km and ultimately only one MLD of water reaches Karwar town. The total projected demand for water from all the existing beneficiaries is 31.20 MLD.

Karnataka Urban Water Supply & Drainage Board (KUWS&DB) has come up with a new proposal for rehabilitating the existing supply system itself, which includes construction of a 50 lakh litres capacity and an RCC mother tank near Navagadde, replacement of old valves, construction of 4.5 lakh litres sump, provision additional pumping machinery, strengthening 28.5 km of 700 mm diameter PHC gravity main joints etc. This scheme involves laying of pipe across a ghat by pipe jacking, filter house, repairs to gravity main and providing DG sets etc. Further rehabilitation and upgrading the existing water supply distribution system for Karwar & Ankola towns is also included under the project

e. Bhatkal

Presently, only about 40% of Bhatkal town is being served by piped water supply with a WTP of 3.4 MLD capacity. A comprehensive water supply scheme, which aims to cover 100% population and to meet the future demand (till 2026 AD) of 9.1 MLD capacity at a supply rate of 135 lpcd covering 80% of population with house connections and at 70 lpcd for the remaining 20% of population through stand posts, has been envisaged. The present project includes augmentation of existing water supply system as well as implementation of some major items of works such as strengthening of existing dam, construction of new intake well and a WTP of 8.25 MLD, 3.5 km feeder mains, 1 OHT of 0.35 ML

capacity, 1 GLSR of 0.81 ML and laying of 35 KMs of new distribution lines.

f. Dandeli

The town of Dandeli currently has two water supply schemes with a combined capacity of 16.2 MLD. But only about 6.0 MLD water is being supplied to about 64% of the population at a rate of 146 lpcd. The project envisages expansion of the distribution network and improvements in the functioning of existing infrastructure to the level of its designed capacity. The present project includes renovation of existing 13.5 MLD WTP, replacement of 1.1 km delivery mains, laying of about 40 km distribution lines and repairs to OHT and treated water mains.

g. Sirsi

At present, Sirsi town has a treatment plant of 4.45 MLD capacity serving only 65% of the population at 78 lpcd. A new scheme, considering a supply rate of 135 lpcd to cover at least 80% of population with house connections and at 70 lpcd for the remaining 20% population through stand posts projected at 16.64 MLD demand is planned. The infrastructure being provided includes head works, intermediate pumping station, a 16.5 MLD WTP, raw water and treated water mains, four OHTs of total capacity of 2.20 MLD and 87 km distribution lines in new areas.

Under Ground Drainage

Mangalore and Udupi have dilapidated/partly defunct sewerage systems at present. The project includes rehabilitation of the existing systems and augmentation of sewerage system for Mangalore and Udupi to cover more new areas. Mangalore will have an improved sewage treatment system for most of the city area and it will have four Sewerage Treatment Plants (STPs) with a combined capacity of 88.7 MLD against the existing treatment facility of 27 MLD. In Udupi an additional 12.57 square kilometres of city's area will be covered under UGD network. The treatment facility will be augmented from the existing 6 MLD to 12.5 MLD. The schemes consist of laying new pipe lines, construction of new wet wells and STPs. Rehabilitation of the existing system is also included in the scheme.

Bhatkal has a sewerage network covering only about 50% of the town, but the system does not have any treatment plant with the sewage system defunct and beyond rehabilitation. At present, houses in Bhatkal have only on-site sanitation facilities. A comprehensive scheme has been

prepared for this town, which includes laying of 20 km of sewer lines and 3.2 MLD STP for Zone II and III.

Karwar presently does not have a UGD system. Improvement in sanitation is planned by providing a comprehensive UGD system for high density core area with conventional sewerage system 1.6 MLD sewage treatment facilities. The remaining area is planned to be covered by septic tanks with up flow filters.

The UGD system for Sirsi was not opted by the CMC, Sirsi and most commonly septic tanks are being used in all the Package II towns of Ankola, Bhatkal, Dandeli, Karwar and Sirsi. The septic tank sludge in these towns is presently being emptied manually which is potentially unhygienic. Therefore, mechanical de-sludging mechanism with vacuum suction emptier is proposed for all the project towns in Uttar Kannada district.

Solid Waste Management (SWM)

The ten project towns of KUDCEMP together generate and process about 1840 tonnes of solid waste per day. These towns would require an investment of Rs 26.06 crore towards integrated SWM. KUIDFC has prepared master plan and the action plan for all the towns, which includes segregation, collection, primary transportation, secondary storage, transportation, treatment and engineered landfill operations.

A strong awareness strategy for the effective implementation and management of SWM has been planned. KUIDFC has organised a series of meetings and workshops for proper design and effective information, education and communication campaigns in all the project towns. The implementation of SWM activities is planned with the involvement of Non-Governmental Organisations (NGOs)/Self Help Groups (SHGs). A special budget has been earmarked for this activity. KUIDFC is making sustained efforts at monitoring and awareness-building exercises besides making efforts to strengthen the operational capacities of Urban Local Bodies in handling solid waste by providing specialized, mechanized machinery, equipments and vehicles such as dumpers, containers, tipping trucks to handle solid wastes. Solid Waste Management programme include, preparation of the Solid Waste Management Plan for the project towns, procurement of new mechanized equipment for collection and transportation of solid waste, development of engineered land fills, development of compost plants, educating public on issues of solid waste management, forming community associations to manage the solid waste etc. Mangalore and Ullal will have a combined land fill and composting facility. Puttur, Udupi and Kundapura will have separate land fills. To adhere to the normative standards of Municipal Solid Waste

(MSW) Rules and guidelines, KUIDFC has prepared a Solid Waste Management Master Plan. This plan includes segregation, collection, transportation, composting, landfill operations etc. The landfills are proposed to be constructed by providing 90 cm thick impervious High Density Poly Ethylene liner, drainage liner etc

Urban transport infrastructure-Roads

Comprehensive Traffic Management plans are prepared for the project towns and identified roads & junctions in the project towns are being improved to the extent of availability of funds.

Storm Water Drains

Storm water drainage master plans are prepared for all the project towns and drains are being improved under the project. In addition to covering more areas with storm water drains, improvement works like de-silting, repair of side wall, bed pitching and construction of foot bridges over drains are being implemented under the project in all the towns.

KUNDAPURA

Water supply:

A new water supply scheme is being executed for providing treated water to Kundapura town. The new scheme includes construction of a jackwell, a WTP and around 60 km of new pipe lines. It is expected that the water supply in Kundapura would increase from the existing seven lpcd to 135 lpcd.

The project covers rehabilitation of various components in the existing water supply systems of all the project towns and provision of stand posts for the benefit of urban poor. The implementation of the project would ensure supply of treated water as per the norms in all the project towns.

Capacity of proposed scheme: 7.6 MLD

Total investment: Rs 142.76 million

Status: In progress

Details and progress:

No	Component	Cost (Rs in million)	Progress (%)
1	Intake works, raw water transmission mains and water treatment plant	44.70	63%
2	Clear water transmission mains	44.39	75%
3	Distribution system and reservoirs	49.83	83%
4	Express feeder mains	3.84	80%
	Total	142.76	

Storm water drainage

Total length of drains: 9 km

Total investment: Rs 6.95 million

Status: Completed

Solid waste management

Total investment: Rs 14.53 million

Status: Contract awarded in March 2006

Slum improvement

No of slums: 2 nos

Total investment: Rs 0.17 million

Status: Completed

Municipal services and facilities

Component: Construction of TMC office cum commercial complex

Total investment: Rs 17.17 million

Status: Completed

Component: Construction of public toilet

Total investment: Rs 0.16 million

Status: Completed

Urban transport infrastructure

Total no of roads: 4 nos

Total investment: Rs 42.58 million

Status: Work just commenced. Progress-17%

MANGALORE

Water supply:

A comprehensive combined water supply scheme is planned for Mangalore and Ullal to give an additional 80 mld of water. The scheme contains a new intake well, a new treatment plant of 80 mld capacity and clear water mains – common for Mangalore and Ullal. Apart from this, 13 over head tanks (OHTs), four ground level reservoirs (GLRs) and one sump with four new intermediate pumping stations (IPS) will be constructed in Mangalore and additional pipe lines of 800 km length is proposed to be laid. Ullal will have four new OHTs, one GLR and two intermediate pumping stations. With this, the water supply for Mangalore will increase from the existing 97 lpcd to 135 lpcd. The water supply for Ullal will increase from the existing 27 lpcd to 135 lpcd.

Capacity of proposed scheme: 80 MLD

Total investment: Rs 1020.94 million

Status: In progress

Details and progress:

No	Component	Cost (Rs in million)	Progress (%)
1	Rehabilitation of existing water supply scheme	48.00	81%
2	Intake works and raw water transmission mains	58.17	65%
3	Water treatment plants	109.53	63%
4	Clear water transmission mains	361.84	70%
5	Reservoirs and pumphouses	143.05	70%
6	Distribution system	292.74	70%
7	Express feeder mains	7.61	40%
	Total	1020.94	

Under Ground Drainage:

Total treatment capacity: 88.7 MLD

Total length of sewer lines: 450 km

Total investment: Rs 1536.05 million

Status: In progress

Details and progress:

No	Component	Cost (Rs in million)	Progress (%)
1	Laying of sewer lines, construction of wetwells and pumping mains	949.31	20%
2	Construction of 43.5 MLD STP at Kavour including site grading	165.76	78%
3	Construction of 20 MLD STP at Jeppinamogaru	113.92	58%
4	Construction of 16 MLD STP at Surathkal	123.41	45%
5	Construction of 8.75 MLD STP at Pachanady	171.90	33%
6	Express feeder mains	11.75	55%
	Total	1519.89	

Storm water drainage

Total length of drains: 7.3km
Total investment: Rs 28 million
Status: Completed

Solid waste management

Capacity of landfill site:
Capacity of compost plant:
Total investment: Rs 145.32 million
Status: In progress

Details and progress:

No	Component	Cost (Rs in million)	Progress (%)
1	Civil works for solid waste management	92.46	71%
2	Construction of compost plant	52.86	37%
	Total	145.32	

Slum improvement

No of slums: 19 nos

Total investment: Rs 20 million

Status: 77% completed

Municipal services and facilities

Component: Construction of 2 nos public toilets

Total investment: Rs 0.95 million

Status: Completed

Urban transport infrastructure

Total no of roads: 2 nos

Total investment: Rs 112 million

Status: Contract yet to be awarded

PUTTUR

Water supply:

A new water supply scheme is being executed for Puttur with a provision to construct one additional vented dam across Kumaradhara River, a new intake and jackwell, water treatment plant (WTP), three OHTs, one mini water tank, one intermediate pumping station and around 200 km of new pipe line. The water supply for Puttur will increase from the existing 12 lpcd to 135 lpcd. The water supply augmentation works taken up at Udupi include construction of a new vented dam across river Swarna, one new jackwell and WTP, seven OHTs, three GLRs, one IPS and around 425 km of pipe line. Consequently, water supply in Udupi will increase from the existing 50 lpcd to 135 lpcd.

Capacity of proposed scheme: 6.8 MLD

Total investment: Rs 254.90 million

Status: In progress

Details and progress:

No	Component	Cost (Rs in million)	Progress (%)
1	Construction of barrage across Kumaradhara river	81.82	42%
2	Intake works and raw water transmission main	19.54	61%
3	Water treatment plant	17.29	85%
4	Clear water transmission mains and intermediate pumping station	61.87	100%
5	Distribution system and reservoirs	69.68	71%
6	Express feeder mains	4.70	71%
	Total	254.90	

Storm water drainage

Total length of drains: 14.6 km

Total investment: Rs 17.65 million

Status: Completed

Solid waste management

Capacity of landfill site:
Total investment: Rs 17.94 million
Status: Completed

Slum improvement

No of slums: 2 nos
Total investment: Rs 1.95 million
Status: Completed

Municipal services and facilities

Component: Construction of private bus stand and TMC office complex
Total investment: Rs 22.46 million
Status: Completed

Component: Construction of taxi stand, commercial complex, flower market & public toilet
Total investment: Rs 10.15 million
Status: Completed

Component: Construction of 3 nos public toilets
Total investment: Rs 1.16 million
Status: Completed

Urban transport infrastructure

Total no of roads: 8 nos
Total investment: Rs 124.21 million
Status: One contract worth Rs 57.59 million awarded. Progress-17.86%
One contract worth Rs 66.62 million yet to be awarded

UDUPI

Water supply:

Capacity of proposed scheme: 27.25 MLD

Total investment: Rs 568.04 million

Status: In advanced stage of completion

Details and progress:

No	Component	Cost (Rs in million)	Progress (%)
1	Rehabilitation of existing weir and construction of new barrage	42.41	85%
2	Intake works, raw water transmission main and water treatment plant	65.56	90%
3	Clear water transmission mains and reservoirs	205.21	98%
4	Distribution system	250.22	85%
5	Express feeder mains	4.64	95%
	Total	568.04	

Under Ground Drainage:

Total treatment capacity: 12 MLD

Total length of sewer lines: 84 km

Total investment: Rs 282.47 million

Status: In progress

Details and progress:

No	Component	Cost (Rs in million)	Progress (%)
1	Laying of sewer lines, construction of wetwells and pumping mains	224.74	30%
2	Construction of 12 MLD STP at Nittur	56.04	70%
3	Express feeder mains	1.69	56%
	Total	1519.89	

Storm water drainage

Total length of drains: 8km
Total investment: Rs 17.61 million
Status: Completed

Solid waste management

Capacity of landfill site:
Total investment: Rs 49.22 million
Status: Yet to be awarded

Slum improvement

No of slums: 1 no
Total investment: Rs 0.55 million
Status: Completed

Municipal services and facilities

Component: Construction of parking and commercial complex
Total investment: Rs 19.31 million
Status: Nearing completion

Component: Construction of 3 nos public toilets
Total investment: Rs 1.23 million
Status: Completed

Urban transport infrastructure

Total no of roads: 4 nos
Total investment: Rs 50.20 million
Status: Works just commenced

ULLAL

Water supply:

A comprehensive combined water supply scheme is planned for Mangalore and Ullal to give an additional 80 mld of water. The scheme contains a new intake well, a new treatment plant of 80 mld capacity and clear water mains – common for Mangalore and Ullal. Apart from this, 13 over head tanks (OHTs), four ground level reservoirs (GLRs) and one sump with four new intermediate pumping stations (IPS) will be constructed in Mangalore and additional pipe lines of 800 km length is proposed to be laid. Ullal will have four new OHTs, one GLR and two intermediate pumping stations. With this, the water supply for Mangalore will increase from the existing 97 lpcd to 135 lpcd. The water supply for Ullal will increase from the existing 27 lpcd to 135 lpcd.

Capacity of proposed scheme: 11 MLD (Intake and treatment combined with Mangalore)

Total investment: Rs 160.50 million

Status: In progress

Details and progress:

No	Component	Cost (Rs in million)	Progress (%)
1	Clear water transmission main and reservoirs	70.48	70%
2	Distribution system and reservoirs	58.02	70%
3	Underwater pipeline crossing across river Nethravathi	32.00	Not commenced
	Total	160.50	

Storm water drainage

Total length of drains: 3 km

Total investment: Rs 4.95 million

Status: Completed

Slum improvement

No of slums: 3 nos

Total investment: Rs 2.20 million

Status: Completed

Municipal services and facilities

Component: Construction of TP office complex and bus stand

Total investment: Rs 9.63 million

Status: Completed

Component: Construction of commercial complex at Thokottu

Total investment: Rs 15.06 million

Status: Nearing completion

Component: Construction of public toilet at Thokottu complex

Total investment: Rs 1.85 million

Status: Just commenced

Urban transport infrastructure

Total no of roads: 6 nos

Total investment: Rs 54.30 million

Status: One contract worth Rs 31.03 million awarded. Progress-28%

One contract worth Rs 23.30 million yet to be awarded

ANKOLA

Water supply:

For Karwar and Ankola, the present source of supply is from Gangavali River at Honnahalli, which is situated at 42 km from Karwar town. The existing beneficiaries are Karwar and Ankola towns, BILT, Karwar Port, enroute villages and naval base (partially). The existing scheme, commissioned in 1975, was designed for a capacity of 40.90 MLD, which, however, yields only 20.00 MLD due to heavy leakages in the PSC gravity main of about 42 km and ultimately only one MLD of water reaches Karwar town. The total projected demand for water from all the existing beneficiaries is 31.20 MLD.

Karnataka Urban Water Supply & Drainage Board (KUWS&DB) has come up with a new proposal for rehabilitating the existing supply system itself, which includes construction of a 50 lakh litres capacity and an RCC mother tank near Navagadde, replacement of old valves, construction of 4.5 lakh litres sump, provision additional pumping machinery, strengthening 28.5 km of 700 mm diameter PHC gravity main joints etc. This scheme involves laying of pipe across a ghat by pipe jacking, filter house, repairs to gravity main and providing DG sets etc. Further rehabilitation and upgrading the existing water supply distribution system for Karwar & Ankola towns is also included under the project

Capacity of proposed scheme: 3.6 MLD (Intake and transmission combined with Karwar)

Total investment: Rs 22.10 million

Status: Just commenced

Storm water drainage

Total length of drains: 5.5 km

Total investment: Rs 5.65 million

Status: Contract yet to be awarded

Slum improvement

No of slums: 2 nos

Total investment: Rs 4.70 million

Status: Completed

Municipal services and facilities

Component: Construction of vegetable market and municipal office
Total investment: Rs 7.09 million
Status: Completed

Component: Construction of Fish Market, Public Convenience and
Silicon Vessel
Total investment: Rs 6.55 million
Status: Completed

Urban transport infrastructure

Total no of roads: 28 roads, 15.8 km
Total investment: Rs 55.53 million
Status: Side drain works in progress

BHATKAL

Water supply:

Presently, only about 40% of Bhatkal town is being served by piped water supply with a WTP of 3.4 MLD capacity. A comprehensive water supply scheme, which aims to cover 100% population and to meet the future demand (till 2026 AD) of 9.1 MLD capacity at a supply rate of 135 lpcd covering 80% of population with house connections and at 70 lpcd for the remaining 20% of population through stand posts, has been envisaged. The present project includes augmentation of existing water supply system as well as implementation of some major items of works such as strengthening of existing dam, construction of new intake well and a WTP of 8.25 MLD, 3.5 km feeder mains, 1 OHT of 0.35 ML capacity, 1 GLSR of 0.81 ML and laying of 35 KMs of new distribution lines.

Capacity of proposed scheme: 8.25 MLD

Total investment: Rs 76.99 million

Status: In advanced stage of completion

Details and progress:

No	Component	Cost (Rs in million)	Progress (%)
1	Rehabilitation of existing weir Kadavinakatte	17.16	100%
2	Intake works, raw water transmission main and pumping station	25.41	70%
3	Water treatment plant	12.11	95%
4	Distribution system and reservoirs	20.76	75%
5	Express feeder mains	1.55	100%
	Total	76.99	

Under Ground Drainage:

Total treatment capacity: 3.2 MLD

Total length of sewer lines: 19.5 km

Total investment: Rs 121.29 million

Status: In progress

Details and progress:

No	Component	Cost (Rs in million)	Progress (%)
1	Laying of sewer lines and construction of manholes	26.69	40%
2	Construction of 3.2 MLD STP	94.60	75%
	Total	121.29	

Storm water drainage

Total length of drains: 2km
Total investment: Rs 10.12 million
Status: Nearing completion

Solid waste management

Capacity of landfill site:
Total investment: Rs 10.54 million
Status: Work yet to commence

Slum improvement

No of slums: 3 nos
Total investment: Rs 0.64 million
Status: Completed

Municipal services and facilities

Component: Construction of vegetable market and commercial complex
Total investment: Rs 18.48 million
Status: Completed

Urban transport infrastructure

Total length of roads: 4 km
Total investment: Rs 67.34 million
Status: One contract worth Rs 32.77 million awarded. Progress-14%
One contract worth Rs 34.57 million yet to be awarded

DANDELI

Water supply:

The town of Dandeli currently has two water supply schemes with a combined capacity of 16.2 MLD. But only about 6.0 MLD water is being supplied to about 64% of the population at a rate of 146 lpcd. The project envisages expansion of the distribution network and improvements in the functioning of existing infrastructure to the level of its designed capacity. The present project includes renovation of existing 13.5 MLD WTP, replacement of 1.1 km delivery mains, laying of about 40 km distribution lines and repairs to OHT and treated water mains.

Rehabilitation of existing water supply system

Total investment: Rs 27.14 million

Status: Nearing completion

Details and progress:

No	Component	Cost (Rs in million)	Progress (%)
1	Distribution system and rehabilitation of reservoirs	19.50	60%
2	Rehabilitation of civil works for existing system	5.50	80%
3	Rehabilitation of electrical and mechanical works for existing system	2.14	90%
	Total	27.14	

Storm water drainage

Total length of drains: 9.5km

Total investment: Rs 31.83 million

Status: 55% completed

Slum improvement

No of slums: 2 nos

Total investment: Rs 2.83 million

Status: Completed

Municipal services and facilities

Component: Construction of vegetable market and municipal office
Total investment: Rs 11 million
Status: Completed

Component: Construction of public conveniences and silicon vessel
Total investment: Rs 2.68 million
Status: Completed

Component: Construction of community sports complex
Total investment: Rs 32.80 million
Status: 52% completed

Urban transport infrastructure

Total length of roads: 23.5 km
Total investment: Rs 123.98 million
Status: Progress-12%

KARWAR

Water supply:

For Karwar and Ankola, the present source of supply is from Gangavali River at Honnahalli, which is situated at 42 km from Karwar town. The existing beneficiaries are Karwar and Ankola towns, BILT, Karwar Port, enroute villages and naval base (partially). The existing scheme, commissioned in 1975, was designed for a capacity of 40.90 MLD, which, however, yields only 20.00 MLD due to heavy leakages in the PSC gravity main of about 42 km and ultimately only one MLD of water reaches Karwar town. The total projected demand for water from all the existing beneficiaries is 31.20 MLD.

Karnataka Urban Water Supply & Drainage Board (KUWS&DB) has come up with a new proposal for rehabilitating the existing supply system itself, which includes construction of a 50 lakh litres capacity and an RCC mother tank near Navagadde, replacement of old valves, construction of 4.5 lakh litres sump, provision additional pumping machinery, strengthening 28.5 km of 700 mm diameter PHC gravity main joints etc. This scheme involves laying of pipe across a ghat by pipe jacking, filter house, repairs to gravity main and providing DG sets etc. Further rehabilitation and upgrading the existing water supply distribution system for Karwar & Ankola towns is also included under the project

Capacity of proposed scheme: 12 MLD

Total investment: Rs 258.42 million

Status: In progress

Details and progress:

No	Component	Cost (Rs in million)	Progress (%)
1	Rehabilitation and upgrading existing distribution system	97.83	55%
2	Pipe pushing by horizontal boring across Mudga Ghat	12.10	Yet to commence. Tenders invited.
3	Balance civil works of combined WS scheme	41.50	
4	Balance works of	12.50	

	pumping machinery of combined WS scheme		
5	Strengthening of existing PSC main	94.49	Tenders yet to be invited
	Total	250.59	

Under Ground Drainage:

Total treatment capacity: 1.5 MLD

Total length of sewer lines: 20 km

Total investment: Rs 63.27 million

Status: In progress

Details and progress:

No	Component	Cost (Rs in million)	Progress (%)
1	Laying of sewer lines and construction of manholes	50.65	22%
2	Construction of 1.5 MLD STP	12.62	53%
	Total	121.29	

Storm water drainage

Total length of drains: 12km

Total investment: Rs 8.26 million

Status: Contract yet to be awarded

Solid waste management

Total investment: Rs 16.88 million

Status: Completed

Slum improvement

No of slums: 2 nos

Total investment: Rs 6.10 million

Status: 30% completed

Municipal services and facilities

Component: Construction of public conveniences and silicon vessel
Total investment: Rs 7.51 million
Status: 60% Completed

Component: Construction of vegetable market, fish market and fruit & flower market
Total investment: Rs 6.17 million
Status: Completed

Urban transport infrastructure

Total length of roads: 6.7 km
Total investment: Rs 201.40 million
Status: One contract worth Rs 118.95 million awarded. Progress-12%
One contract worth Rs 82.45 million yet to be awarded

SIRSI

Water supply:

At present, Sirsi town has a treatment plant of 4.45 MLD capacity serving only 65% of the population at 78 lpcd. A new scheme, considering a supply rate of 135 lpcd to cover at least 80% of population with house connections and at 70 lpcd for the remaining 20% population through stand posts projected at 16.5 MLD demand is being implemented. The infrastructure being provided includes head works, intermediate pumping station, a 16.5 MLD WTP, raw water and treated water mains, 3 OHTs of total capacity of 2.20 MLD and 90 km distribution lines in new areas.

Capacity of proposed scheme: 16 MLD

Total investment: Rs 190.41 million

Status: Almost completed

Details and progress:

No	Component	Cost (Rs in million)	Progress (%)
1	Intake works and booster station	53.85	61%
2	Raw water transmission main	64.39	99%
3	Water treatment plant	20.37	80%
4	Distribution system and reservoirs	46.08	65%
5	Express feeder mains	5.72	100%
	Total	190.41	

Storm water drainage

Total length of drains: 15km

Total investment: Rs 32.41 million

Status: 50% work completed

Solid waste management

Total investment: Rs 15.33 million

Status: Notice to proceed yet to be issued

Slum improvement

No of slums: 2 nos
Total investment: Rs 2.84 million
Status: Completed

Municipal services and facilities

Component: Construction of Fish market
Total investment: Rs 3.49 million
Status: Completed

Component: Construction of general market at fire station
Total investment: Rs 4.36 million
Status: Completed

Component: Construction of general market behind old municipal office
Total investment: Rs 6.21 million
Status: Completed

Urban transport infrastructure

Total length of roads: 30 km
Total investment: Rs 104.48 million
Status: 18% progress achieved

Additional remarks:
Pls add the local offices address

Local office addresses:

KUIDFC
Project Monitoring Unit-KUDCEMP
Office of the Deputy Project Director
1st Floor, Kadri Market Complex
Mallikatta
Mangalore-575002

KUIDFC
Office of the Executive Engineer
No 4 Division
Ayesha Park
Rani Chennamma Road
Udupi

KUIDFC
Office of the Executive Engineer
No 3 Division

Nayak Building (Old RTO Office)
Bolwar
Puttur

KUIDFC
Office of the Deputy Project Director
3rd Floor, Datta Prasad Building
Green Street
Karwar

KUIDFC
Office of the Executive Engineer
1/A/613, Meera Complex
J N Road
Dandeli-581325

Pls add other details

Pls add the status report – 1-2 pages at the end : contract packages:

**KUDCEM PROJECT
OVERALL STATUS
(As on 31 March 2006)**

No.	Description	Number of original * packages	Number of contracts **	Cost (Rs in Million)
1	Total Contracts	153	166 *	6478.33
2	Approved by ADB	144	149	5737.55
3	Notice to Proceed issued	141	146	5634.45
4	Contracts yet to be awarded			
	a) Bids under evaluation	3	8	224.30
	b) Bids notified and to be received	NIL	NIL	NIL
	c) Bids to be notified	6	9	516.48
	Total	9	17	740.78
5	Expenditure upto 31 March 2006	141	146	3416.74

- * Includes packages for civil works, electrical works and supply of goods but exclude e-components
- ** Includes contracts by retendering for terminated/foreclosed packages.

physical & financial progress, etc.

Pls add – for each town the details of packages & its status

**STATUS OF WORKS BY TOWN AT A GLANCE
(As on 31 March 2006)**

Rs. in million

No.	Town	Total Contract Packages		Awarded contract Packages		Bids under Evaluation		Bids to be notified		Cumulative expenditure up to 31 March '06	Financial Progress %
		No.	Cost	No.	Cost	No.	Cost	No.	Cost		
PACKAGE 1											
1	Kundapura	7	224.87	7	224.87					152.07	67.63%
2	Mangalore	38 (+ 3RT)	2867.32	37	2511.19			1 (+ 3RT)	356.13	1413.43	49.29%
3	Puttur	13	464.18	13	464.18					290.24	62.53%
4	Udupi	19	989.36	19	989.36					668.00	67.52%
5	Ullal	10	235.13	8	193.22			2	41.91	129.95	55.27%
Sub total		87 (+ 3RT)	4780.86	84	4382.82	0	0.00	3 (+ 3RT)	398.04	2653.69	55.51%

PACKAGE 2												
1	Ankola	6 (+ 1RT)	109.16	6	103.51	(1RT)	5.65			37.60	34.44%	
2	Bhatkal	13	306.02	12	271.45	1	34.57			193.54	63.24%	
3	Dandeli	11 (+ 1RT)	239.65	11 (+ 1RT)	239.65					100.40	41.89%	
4	Karwar	13 (+ 7RT)	575.33	11 (+ 3RT)	324.03	1 (+ 4RT)	156.81	1	94.49	163.22	28.37%	
5	Sirsi	14 (+ 1RT)	363.71	13 (+ 1RT)	359.56			1	4.15	210.88	57.98%	
Sub total		57 (+ 10RT)	1593.87	53 (+ 5RT)	1298.20	2 (+ 5RT)	197.03	2	98.64	705.64	44.27%	
TOTAL		144 (+ 13RT)	6374.73	137 (+ 5RT)	5681.02	2 (+ 5RT)	197.03	5 (+ 3RT)	496.68	3359.33	52.70%	
B. Supply Contracts (under Package 1)												
1	Supply Contracts		9	103.60	7	56.53	1	27.27	1	19.80	57.41	55.42%
GRAND TOTAL			153 (+ 13RT)	6478.33	144 (+ 5RT)	5737.55	3 (+ 5RT)	224.30	6 (+ 3RT)	516.48	3416.74	52.74%

Karnataka State Policy on Integrated Solid Waste Management

1. Introduction

The most pressing problem faced by any urban centre in India today is Municipal Solid Waste Management (MSWM). Rapid urbanisation and changing lifestyles have led to the generation of huge amounts of garbage and waste in the urban areas, so much so, over the past few years, just the handling this Municipal Solid Waste (MSW) has assumed the proportion of a major organizational, financial and environmental challenge.

Despite MSWM being a major task of the local governments, typically accounting for a sizeable portion of the municipal budget - about 20% to 50%, yet the Urban Local Bodies (ULBs) are unable to provide effective services. Most of the ULBs do not even have reliable MSW generation estimates.

An unfortunate fallout of rapid urbanization without the adequate infrastructure backup is that in all Indian cities/towns, disposal of waste is done indiscriminately, leading to stray animal menace, clogged drains and spread of diseases. The process of collection, transportation and disposal of MSW is not complete in most of the cities/towns with garbage heaps remaining unattended until the severity reaches unmanageable proportions. Also, the high organic content of Indian MSW, compounded by the hot and humid tropical climate leads to the rapid decomposition of the uncollected waste and is an ever-present health hazard. In addition, the contamination of MSW by bio-medical and industrial hazardous waste is a growing concern. Brief Statistical Details of Generation, Collection & Disposal of Waste in ULBs are indicated in **Appendix-1**

Most ULBs spend nearly 60%-70% of their total overall budgetary allocation on collection, another 20%-30% on transportation, and often less than 10% on the treatment and final disposal of MSW. Also, even today, the disposal of wastes is being carried out in an unscientific manner, with crude open dumping in low-lying areas being the prevalent practice followed by most ULBs. MSW is also commonly deposited at dump-yards without ascertaining the suitability of the land for waste disposal. The results of these are foul smell,

breeding of flies and other pests and generation of liquid run offs (leachate), which pose a serious threat to the underground water reserves.

MSWM practices in India are employee intensive, with an estimated 50% of the total municipal staff engaged in these activities. Of late, most ULBs have been restricting new recruitment, therefore even this staff strength is inadequate and is less than desired as per norms (estimated 70% availability vis-à-vis norms). Moreover the implements, machinery and equipment used by staff are mostly of outdated technology, and serve poorly in meeting the new demands. The communication programs for effective MSWM have not been given adequate importance.

As the onus of MSWM has been assumed by ULBs, participation of the other stakeholders (waste generators, NGOs, private entities) is minimal. This and all the above-mentioned factors have hampered the efficient delivery of MSWM services. There is an urgent need to revisit, develop, and implement appropriate strategy for effectively handling MSW.

2. MSW Rules

In view of the serious environmental degradation resulting from the unscientific disposal of MSW, the Ministry of Environment and Forests (MoEF), Government of India, has notified the Municipal Solid Wastes (Management & Handling) Rules, 2000, (MSW Rules), stipulating all municipal authorities to scientifically manage MSW.

Compliance criteria for each and every stage of waste management - collection, segregation at source, transportation, processing and final disposal - are set out in the MSW Rules, which include:

- a. Dumping of MSW in oceans, rivers, open areas, and compaction or bailing are not acceptable.
- b. The biodegradable waste has to be processed by means of composting, vermin-composting, anaerobic digestion or any other appropriate biological processing for stabilization of wastes.
- c. Mixed waste containing recoverable resources should be recycled.

- d. Other technologies for treatment such as Pelletisation, Gasification, Incineration etc. require clearance from Pollution Control Board before planning and implementation.
- e. Landfilling should be the waste disposal method for non-biodegradable, inert waste and other waste that is not suitable either for recycling or for biological processing.

3. Objective

The goal of effective MSWM services is to protect public health, the environment and natural resources (water, land, air). An effective MSWM service can be achieved only by improving the efficiency of MSWM activities, thereby leading to the reduction of waste generation, separation of MSW and recyclable material, and recovery of compost and energy.

The objectives of this State Municipal Solid Waste Management Plan are:

- a. Providing directions for carrying out the waste management activities (collection, transportation, treatment and disposal) in a manner, which is not just environmentally, socially and financially sustainable but is also economically viable.
- b. Establishing an integrated and self-contained operating framework for MSWM, which would include the development of appropriate means and technologies to handle various waste management activities.
- c. Enhancing the ability of ULBs to provide effective waste management services to their citizens.

4. Touchstone Principles

The touchstone principles, which govern the future approach to provision of MSWM services, include the following:

- a. Promoting awareness of waste management principles among citizens and other stakeholders
- b. Minimizing multiple and manual handling of waste, and designing a system to ensure that MSW does not touch the ground till treatment and final disposal
- c. Defining the roles and responsibilities of various stakeholders and putting in place an operating framework, which would include appropriate contractual structures
- d. Developing systems for effective resources utilisation and deployment
- e. Promoting recovery of value from MSW; developing treatment and final disposal facilities, which, while adhering to the statutory requirements, are sustainable, environmentally friendly and economical.

Stakeholder Involvement

MSWM depends, as much upon organisation and co-operation between households, communities, NGOs and ULBs, as it does upon selection and application of appropriate technical solutions for various waste management activities. Towards enhancing the stakeholders' involvement in MWSM, the State Plan proposes the following innovations:

- a. Directing the waste management initiatives to the waste generator level, and entrust the responsibility of source segregation and primary collection to the relevant community based organisation / resident welfare association / Self help group (SHG).
- b. Developing and maintaining, at the KUIDFC, details of the Information, Education and Communication (IEC) activities and awareness programs designed by the State Resource Center for planning and designing.
- c. Utilizing the services of non governmental organisations (NGOs) to operate and coordinate between the ULB, Community and SHG / RWA, in order to propagate the awareness program, the IEC campaign, and to provide support to the informal sector (rag pickers, waste recyclers etc.)

- d. Defining the role of NGOs: The MSW Rules, 2000, stipulate for extensive involvement of the community in SWM. In order to educate the community and bring awareness regarding the modernization of SWM program, the involvement of an intermediary, by way of a Non-Governmental Organisation is very much necessary. NGOs would help in the effective propagation of the complete awareness regarding SWM among various stakeholders so that Waste Management would take place as per the State Policy. The IEC activity would be carried out by NGOs as per the specified terms.
- e. ULBs would allow RWA / SHG to enter into contracts with private operators for various waste management activities, under specified guidelines and structures.

5. Information, Education & Communication Activity (IEC)

IEC is the key to the success of the modernization of MSWM. As stated, awareness amongst community and different stakeholders to meet the demands of the new system for a cleaner environment requires a detailed and thorough understanding at every stage. Involvement of community is going to be the main thrust of the program.

As a prelude to implementation, this IEC activity is going to be taken up, which would involve the participation of some leading NGOs, who would be appointed after a careful selection process. Materials required for the IEC campaign like manuals, flipcharts and other media communication are designed by State Resource Center, Mysore. A detailed Terms of Reference has been prepared for NGO activity (**ToR is enclosed in the Appendix-2**)

6. Primary Collection

Where Primary collection, or first stage collection is concerned, the principle of reducing manual handling and doorstep collection would be promoted. For this purpose, the various activities proposed include the following:

- a. Residents would be encouraged to segregate, store and deliver the MSW to primary collection staff as per procedures set out by ULBs

- b. Auto tippers would be used to enable doorstep collection (residents would be encouraged to deliver waste at door step at a pre-specified time).
- c. The procurement of auto tippers could be done either by the ULB concerned or the SHG / RWA, and appropriate contractual arrangements would be entered into with RWA/SHG and private operator(s) to carry out primary collection activities
- d. The ULB would charge a “user fee” from the residents and other generators, the amount of which would based on need and affordability criteria
- e. The MSW from other larger generators (commercial zones, institutions, hotels etc.) and construction debris would be collected and transferred directly to the secondary transport system and disposed appropriately (bio-degradable to the treatment facility and others to the landfill facility)

7. Street Sweeping and road side drain cleaning

Plans for efficient and effective street cleaning include:

- a. Provision of ergonomically designed implements for street sweeping to the conservancy staff.
- b. Deposition of the refuse swept from the street would be directly into the secondary transportation system
- c. ULB entering into appropriate contractual agreements with private operators (preferably on lump sum basis) for carrying out the activities.

8. Secondary Collection and Transportation

- a. Usage of metal containers of specified dimensions and capacity is proposed for secondary storage. The usage of concrete bins would be discontinued as per the mandatory recommendation of the Committee constituted by The Hon. Supreme Court of India.
- b. MSW from the auto tippers (obtained during primary collection) would be directly uploaded into these metal containers
- c. The metal containers would be handled mechanically through dumper placers, or tractors with tipping trailer mechanism. Compactors have a separate system for secondary collection and these vehicles are not recommended for towns with population of less than 20lakhs.
- d. The transportation vehicles would carry and unload the waste mechanically at treatment plants and landfill sites depending on the type of waste
- e. The procurement of vehicles could either be by ULB concerned or could be arranged with private operators under suitable contractual arrangements

9. Treatment and Landfill Operation

- a. Pursuant to the Supreme Court guidelines and the prevalent market constraints, composting would be the preferred method of treatment.
- b. Landfill, as required under prevailing statutes, would need to be developed to dispose non – biodegradable matter and compost rejects
- c. Development of these facilities, either individually or as integrated unit, could be done under appropriate contractual arrangement (management contract / BOT contracts etc.)

- d. In case of private participation, ULBs would enter into contractual arrangement on a tipping fee basis

10. Implementation Plan

In accordance with and as per the guidelines of the MSW Rules 2000, initially all Class I cities in the state would have both compost plant and landfill sites.

Other cities/towns with less than 1 lakh population would have only suitable Engineered landfill sites with controlled tipping to begin with, and would be progressively upgraded to sanitary landfill with treatment facility. In the controlled tipping process care would be taken to isolate the fill area from surface run offs.

11. Way Forward

Flowing from the principles outlined here, a long-term management strategy and action plan for the state would be developed based on experiences and addressing the following aspects:

- a. Assessment of MSW generation at various ULBs and identification of the best possible means for managing the same
- b. Setting operational targets for each of the waste management activities and indicating the means of achieving the same for various ULBs
- c. Setting out roles and responsibilities of stakeholders under various contractual arrangements
- d. Developing IEC material and promotional / awareness campaigns
- e. Developing a resource utilisation guidelines for different categories of ULBs
- f. Setting out operational guidelines for the procurement of equipment and services

Normative Standards and Procedure for Collection, Storage and Transportation of MSW

1.0 Primary collection of waste:

1.1 From Slums and other BPL settlements:

- Collection of waste to be done predominantly by Pourakarmikas (PKs), who should be positioned at 100% strength at these locations.
- One 40 litre – HDPE bin to be placed for every unit of 100 people of the area. (Approximately 20 house holds)
- Approximate weight of waste per bin would be 15 Kgs.
- **Mode of transportation:**
 - 2 Pourakarmikas to be deployed for a normative area (about 1080 houses / 5400 population).
 - One pushcart / tricycle to be provided for transfer of waste from the bins to push cart.
 - Then the waste from Push Carts / Tricycles or from 40 litre collection bins is to be transferred to nearest secondary container.
- **Normative standard for operation:**
 - a) **Pushcart:**
 - One pushcart (Capacity – 40 to 50 kgs) can hold waste from 3 bins.
 - Approximate time taken for one such operation for delivering to secondary container – 20 minutes.
 - Number of bins handled by Pourakarmikas in a 6-hour shift = 54 bins = 810 kgs = 5400 population = 1080 houses.
Depending on operational distance and travel time, quantity of waste and number of houses handled would vary.
 - If a town has 15000 slum houses, 14 batches or 28 PKs are required for slum operation.
 - b) **Tricycle:**
 - One tricycle (Capacity – 80 to 100 kgs) can hold waste from 6 bins
 - Approximate time taken for one such operation for delivering to secondary container – 40 minutes.

- Pourakarmikas should also collect recyclable waste if the dwellers prefer to deliver to PKs for centralized collection.
- Recyclables to be delivered to a separate transport system using existing vehicles like tippers and tractor-trailers at pre-determined time schedules.

1.2 From non slum residents:

- Normative standard: (Collection from houses only)
 - a) **Auto tipper:**
 - The auto tipper would stop at every 50 m.
 - The segregated green waste is to be delivered by the residents to the vehicle either on move or stationery, at 50 m distance intervals.
 - Time taken at every stop including traverse is 3 minutes.
 - At least 10 houses can be handled at each stop.
 - Time taken by auto tipper for collection from 500 houses before 1st transfer of waste to secondary container = 2½ - 3 hours
 - Time duration for collection from 1000 houses = 6 hours.
(6.30AM to 1.30 PM) with 1 hour break in between.
 - The waste collected from Auto tippers would be transferred directly to 3 cum / 4.5 cum secondary container.
 - b) **Pushcart:**
 - One pushcart can cover about 160 houses in a shift.
 - Pushcart can collect waste from 40 houses in one trip.
 - After each trip, the waste is delivered to the secondary container.
 - Time required for one trip will be 90 minutes.
 - In a 6-hour shift 160 houses can be covered.
 - One person is required for the operation of waste collection.
 - c) **Tricycle:**
 - One tricycle can cover about 240 houses in a shift.
 - Tricycle can collect waste from 80 houses in one trip.
 - After each trip, the waste is delivered to the secondary container.
 - Time required for one trip will be 2 hours.
 - In a 6-hour shift 240 houses can be covered.
 - One person is required for the operation of waste collection.

- **Operation of the system:**
 - ❖ The ULB should procure the vehicle in areas where SHGs cannot be formed and should operate on contract basis.
 - Agreement between ULB and Service Provider
Refer agreement document: Primary Collection Doc-1
 - ❖ Through RWA/SHG/Urban Stree Shakti etc. under following arrangement:
 - Agreement between ULB, RWA and Service Provider
Refer agreement document: Primary Collection Doc-2
 - Agreement between ULB and SHG
Refer agreement document: Primary Collection Doc-3
 - Agreement between ULB and RWA
Refer agreement document: Primary Collection Doc-4

- **Collection from commercial establishments.**
 - Waste to be collected during afternoon soon after green waste collection from houses.
 - Time duration for collection – 1 ½ hrs approximately (10% Of houses).
 - **Operation of the system:**
 - ❖ Through RWA/SHG/Urban Stree Shakti who manage the waste collection in the specified area.
 - ❖ Private operator hired by ULB

- **Collection from bulk waste generators:**
 - Waste generators to make their own provisions as per specified storage container for storage of waste and to synchronize its collection with transport system.
 - Waste generators may also arrange for storage and transport of waste under contract arrangement.
 - **Operation of the system:**
 - ❖ Through an arrangement with existing system of ULB.
 - ❖ Private operator hired by ULB
Refer agreement document: Bulk Collection Doc-1

- **Recyclable waste collection – from houses:**
 - Periodical collection on scheduled days and at a specific time – once/twice in a week in a cyclic system during or after commercial waste collection.
 - Duration of collection – 2 hours.
 - Waste so collected would be delivered to a specified collector of recyclable waste.
 - In the absence of an established collection system by the recycling operators, the ULB is to store at the disposal site and make arrangements for recycling agencies to collect the waste.

2.0 Secondary Storage:

- The waste from the primary collection vehicle is to be transferred to secondary containers
- The secondary storage is the secondary containers having a capacity of 3 m³, 4.5 m³ and 7 m³.
- 7 m³ containers are proposed for large cities only.
- On the basis of weight, the capacity of secondary containers are as follows:
3 m³ : 1.2 tons
4.5 m³ : 1.8 tons
- The secondary containers of 3 m³ and 4.5 m³ are provided in the ratio of 40:60 from the convenience of transportation and storage.
- The secondary storage points are to be identified based on the volume of waste generated. The guideline for locating the containers are indicated below:
 - One container at the center point between a set of 500 households on the main road.
 - One 3m³ container as indicated above in an operational area of 1000 houses.
 - One 4.5 m³ container at the mid point of 2 operational areas of 1000 houses each.
 - Alternately a combination of 3 m³ and 4.5 m³ to be located in the operational area of 1000 houses based on the volume of waste generated.
 - Based on local situation and special circumstances, additional 3 m³ and 4.5 m³ containers may be placed in commercial zones, market areas and other places of bulk waste generators. These containers are in addition to containers for houses indicated in action plan for equipments / vehicles.

- Bulk generators like Choultries, large hotels etc to be insisted for procuring and placing secondary container of required capacity as per standard design in their premises to handle their waste.
- The Secondary Containers are placed on a pre-cast cement concrete floor measuring 4.85 m x 3 m
- ULB will procure required number of secondary containers and manage the system

3.0 Transportation of Secondary containers:

- Secondary containers are to be transported either by Dumper Placer or Tractor Placer as per recommendation based on the size of ULB.
- Dumper Placers are to be provided for Cities with population of 1 lakh or more.
- For towns with less than 1 lakh population Tractor Placer is recommended.
- The vehicle to place empty container before lifting filled up container.
- The green waste and predominantly biodegradable waste to be transported to Treatment facility / disposal site as per arrangement.
- The inorganic waste is to be transported directly to landfill site.
- One twin container Dumper Placer would be required to make 5 trips in shift to treatment/disposal site with an average one way lead of 15 km.

Operation of the system:

- ULB to procure the vehicles and operate the system
- ULB procuring the vehicles to operate the system on O&M contract

Refer Agreement Document: Secondary Collection Doc-1

- ULB to operate the system on contract basis with the Operator providing the designated type of vehicle

Refer Agreement Document: Secondary Collection Doc-2

4.0 Street Sweeping:

- The roads need to be divided into three categories.
- Type A: Daily sweeping
- Type B: Four days in the week. (Sun, Tue, Thu, Sat)
- Type C: Three days in the week. (Mon, Wed, Fri)

- Same staff could be deployed for Type B & C roads.
- Normative standard for staff requirement (For 4 hr work):
 - Average road width – 80 ft: One for every 350m length
 - Average road width – 60 ft: One for every 500m length
 - Average road width – 40 ft and below: One for every 750m length
- Street sweeping to include roadside drain cleaning.
- Use the pushcarts for collection of waste and transport using the available tractor-trailer.
- The waste should be transported directly to landfill site.

Operation of the system:

- ULB would operate the system through Pourakarmikas
- ULB to operate the system on contract basis with specific type of equipments under the following arrangement:
 1. **Lump Sum Fee Contract:**
Refer Agreement Document: Street-Sweeping Doc-1
 2. **Road Length Contract:**
Refer Agreement Document: Street-Sweeping Doc-2

5. MSW management contract:

The entire process of Solid Waste Management could be brought under Service provider who will operate all components of SWM till disposal at designated treatment and landfill site.

Refer Agreement Document: MSWM Contract Doc-1

6. Procurement of Equipments and Vehicles:

The types of equipments and Vehicles for the operations of the SWM have been specified. The choice of vehicle should be based on the normative requirement depending on the class of the city/town.

The details and guidelines for procurement for ULBs are contained in the following document:

Design and Specifications of Tools and Equipments for SWM in Urban Local Bodies

Refer Agreement Document: Procurement Doc-1

Guidelines for Establishment and Operations of Treatment and Landfill Facilities

Treatment and Landfill operation is set out under the following process:

In compliance with MSW Rules 2000, Composting shall be the method of treatment. Other technologies like Incineration, Pelletisation can also be used in specific cases. However Municipal Authorities or Operators wishing to employ State-of-the-Art Technologies shall obtain standards specified by CPCB before applying for authorization.

Landfill sites shall be established in conformity with the provisions of MSW Rules 2000. Quality of leachate shall satisfy the standards indicated in the Schedule IV of MSW Rules 2000.

Guidelines and schedules/specifications for compost plant and landfill facilities have been published.

**Refer: Integrated Solid Waste Management for Treatment and
Landfill Operations in Urban Local Bodies**

Operation of the systems:

A. Treatment:

- Establishment of Compost Plant under Build-Operate-Transfer (BOT) basis
Refer agreement document: Treatment Doc-1

- ULB investing in civil infrastructure and operator to erect the machinery and run the plant under O&M contract
Refer agreement document: Treatment Doc-2

- ULB investing in both civil infrastructure and machinery, Operator to run the plant under O&M contract

Refer agreement document: Treatment Doc-3

B. Treatment and Landfill:

- Establishment of Treatment and landfill facility under BOT basis

Refer agreement document: Treatment & Disposal Doc-1

- ULB investing in the infrastructure with O&M contract for operations

Refer agreement document: Treatment & Disposal Doc-2

C. Landfill:

- Establishment of landfill facility under BOT basis

Refer agreement document: Disposal Doc-1

- ULB investing in the infrastructure with O&M contract for operations

Refer agreement document: Disposal Doc-2

1. Details of MSW Generation in Select ULBs

Sl.No.	Name of ULB	Population (2001 census)	MSW Generated (TPD)	Per Capita Generation (gms)
1	Hospet	163,284	39.93	244.54
2	Hassan	116,628	54.51	467.38
3	Shimoga	274,105	85.00	310.10
4	Raichur	205,634	90.68	440.98
5	Chikmagalur	101,022	40.86	404.47
6	Belgaum	399,600	121.90	305.06
7	Gadag	154,849	67.20	433.97
8	Bidar	172,298	42.76	248.17
9	Bijapur	245,946	80.63	327.84
10	Gangavathi	93,249	38.62	414.16
11	Bellary	317,000	123.46	389.46
12	Davangere	363,780	180.00	494.80
13	Chitradurga	122,594	50.00	407.85
14	Bhadravathi	160,392	51.68	322.21
15	Kolar	113,299	52.00	458.96
16	Robertsonpet	141,294	55.30	391.38
17	Holenarasipura	27,018	12.00	444.15
18	Channarayapatna	33,240	10.00	300.84
19	Sakaleshpura	23,201	6.00	258.61
20	Arasikere	45,160	14.00	310.01
21	Alur	6,133	1.00	163.05
23	Belur	20,225	8.00	395.55
24	Chickkamagalur	19,104	45.00	39.50
29	Moodigere	8,962	4.50	502.12
30	N.R. Pura	7,441	5.00	671.95
31	Shringeri	4,253	1.50	352.69
32	Ullal	49,862	9.90	198.55
33	Tumkur	248,592	54.00	217.22
34	Ramanagaram	79,365	20.00	252.00
35	Channapatna	63,561	20.00	314.66
36	Mandya	131,211	50.00	381.07
37	Maddur	26,456	6.00	226.79
38	Kundapura	28,595	11.34	396.57

The quantity of waste collected and transported by ULBs is approximately 75% of waste generated. The treatment and scientific disposal is almost non-existent.

2. Generation of Waste from various sources in Select ULBs

S.No.	Name of ULB	House holds	Markets	Shops	Others ¹	Total
1.	Ullal	7.4	0.20	0.86	1.03	9.89
2.	Kundapura	4.29	0.40	2.77	1.95	11.34
3.	KGF	35.30	9.00	10.0	3.14	58.98
4.	Hassan	39.29	6.00	8.50	4.86	54.51
5.	Bellary	76.00	9.00	2.60	31.35	123.46
6.	Bidar	25.25	5.00	5.00	7.50	42.76
	Total % of each source	62.31	9.84	9.88	16.56	

The unaccounted difference is not attributable.

3. MSW Generated and Collected in ULBs

Sl. No.	Type of ULB	Total amount of waste generated per day (Tonnes)	Total amount of waste collected per day (Tonnes)
1	City Corporations*	880	735
2	City Municipal Corporations	1921	1360
3	Town Municipal Corporations	599	532
4	Town Panchayats	912	676
	TOTAL	4312	3304

*-Excluding Bangalore City Corporation

4. Availability of Vehicles in ULBs

(Capacity in Tonnes)

Sl. No.	Type of ULB	Lorries		Mini Lorries		Tractors		Others	
		Number	Capacity	Number	Capacity	Number	Capacity	Number	Capacity
1	City Corporation*	43	41	11	19	55	63	5	6
2	City Municipal Corporation	28	122	25	88	170	575	20	77
3	Town Municipal Corporation	1	6	14	50	129	412	12	26
4	Town Panchayat	5	44	4	18	99	280	25	317
	TOTAL	77	213	54	174	453	1330	62	425

Information Educational Communication Programme (IEC) for Solid Waste Management in the cities / towns of Karnataka

TERMS OF REFERENCE

OBJECTIVE:

To undertake a detailed IEC campaign, in Solid Waste Management to bring in awareness among citizens, bulk waste generators and agencies involved in handling of Municipal Solid Waste for a modernized and scientific system. The modernized SWM will have to be brought into practice in accordance with MSW Rules 2000.

SCOPE OF WORK AND STRATEGY:

Scope of Work	Strategy & Tasks to be performed	Target Group
<p>To promote MSW Rules and the Supreme Court judgment and put them into practice. It would mean to promote among citizens and bulk waste generators;</p> <p>Reduction in generation of SW</p> <p>Segregation of recyclable waste</p> <p>Recycling of waste.</p> <p>Compliance with integrated waste management practice to be set up by the ULBs and its benefits.</p> <p>Participation in all components of the project through IEC</p> <p>Awareness on proper use of SWM facility.</p>	<p>Distribution of campaign materials like flip chart brochures, posters, stickers etc. to target group.</p> <p>Showing audio visual tapes and CDs, short films, street plays.</p> <p>Persue with various media including cinema halls in public interest to create awareness</p> <p>Establishing necessary RWA and other supporting net works.</p> <p>Identifying resource persons from the target group (preferably institutions and media) and train them to propagate awareness to citizens and their institutional members</p>	<p>General public, commercial / trade bulk generators like various associations related to trade eg. restaurants, market etc., Educational institutions- primary, secondary, college, university and other institutions, Media Youth clubs, Mahila Mandals, Social clubs like Rotary Club, Lion Club, Round table club etc., RWAs and SHGs</p>
<p>To promote:</p> <p>A change in the mind set of the ULB staff with regard to service orientation and focus on customer satisfaction.</p> <p>Focus on role and responsibilities of the officials in SWM</p> <p>How to make use of manuals and materials.</p> <p>Focus on role of pourakarmikas on SWM starting from generation to disposal</p>	<p>Conducting workshops to staff of ULBs and training them using manuals and other IEC materials.</p> <p>Conducting orientation programme for pourakarmikas</p> <p>Conducting orientation programme for line department staff.</p> <p>Identifying resource person from ULB / any other local organisations and training them to propagate awareness amongst staff on continuous basis.</p>	<p>Municipal staff and officials of ULBs.</p>

Participation cooperation, civic sense and payment of user charges and cost recovery.	Establish two way communication mechanisms with stakeholders of the project such as citizens, the media, RWAs on one hand and the implementing agencies like ULBs on the other hand. Community level meetings Identifying resource persons from RWA or local organisations (College, School, Society) to propagate awareness amongst the citizens.	General Public, Commercial trade bulk generators.
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Details of activities to be carried out:

There is an increasing concern among the both waste generators and ULBs to provide a systematic approach for safe handling and disposal of municipal solid waste. The state has planned a scientific and modernized Solid Waste Management for all ULBs. In order to make the system sustainable and efficient, it is necessary to generate proper awareness to all concerned. Awareness among people is very low resulting in dumping of waste haphazardly which can be seen on streets, vacant lands, public places, drains etc.,

Under the IEC programme, the NGO will undertake the following:

Motivation, social mobilization and environment building for implementation of SWM.

Enhancing community participation in Solid Waste Management.

Communication activities including dissemination of communication materials to promote behavior change towards the environment and its cleanliness.

Establishing necessary RWA and other supporting networks

Strengthening the urban local bodies with appropriate training including:

Focus on role and responsibilities of the officials in SWM

How to use manuals and materials.

Focus on role of pourakarmikas on SWM starting from SW generation to disposal.

The NGOs should be oriented to reach the target population through CBOs, SHGs, Youth Clubs, Mahila Mandals, Educational Institutions etc., to encourage them for active participation in SWM. Certain social organizations like Rotary Club, Lions Club, Round Table etc., will also be involved in IEC activities.

The NGOs will co-ordinate implementation of the IEC on sustained basis, using local mass media such as newspapers, radio and community level meetings, involving government agencies, ULBs, local communities, NGOs and civil society organizations.

Duration : The IEC activity is proposed for 12 months duration.

Feed back : NGO shall give the feedback periodically on the implementation of IEC activities for SWM.

Public cooperation in SWM to keep city clean & litter free.

Segregation/storage of waste at house hold level and dedicated primary collection system for bio degradable & recycling waste.

Disposal of house hold hazardous and inorganic waste.

Disposal from commercial area.

Public reaction / views for implementing the new system of SWM.

Cooperation & understanding of ULB employees in SWM activity.

Any other activity needs reporting.

Documentation of the IEC Activity:

NGO is expected to document the IEC activities carried out and submit monthly, quarterly and annual detailed report on the activities conducted by them. This shall include:

List of all activities carried out / proposed.

Expenditure / budget.

List of institutions / organizations / establishments / individual participation in dissemination of awareness programme along with details.

List of the activities and actions carried out to train and empower the employees of ULB.

Any other related activity.

The NGO is expected to have experience, reputation and contacts in the project areas. The NGO will report to the Managing Director, KUIDFC.

KUIDFC will provide all required communications materials such as manual, posters, leaflets, films etc., for supporting the IEC activities for SWM.

The NGO will prepare the following:

IEC programme within two weeks of signing of the contract.

Monthly and Quarterly reports.

Final Report within two months after completion of the project.

KUIDFC, the Directorate of Municipal Administration (DMA) and the Urban Local Bodies (ULBs) will make available copies of all studies, plans, reports, financial statements and progress reports as may be needed by the NGO for conducting the IEC programme.
