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CapaCITIES

Bankability Report: O&M of Micro-Composting Centers - Coimbatore



CapaCITIES

LOW CARBON • CLIMATE RESILIENT • CITY DEVELOPMENT

econcept

Research / Consulting / Evaluation

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Introduction

As committed to the National Green Tribunal (NGT) Coimbatore Corporation is setting up 65 micro composting centres. In its order in the case filed by V. Eswaran and Vellalore resident K.S. Mohan against State Government and Corporation officials, the Tribunal had directed the civic body to start operations in the centres within four months. It also directed the Corporation to complete biomining the 15.50 lakh cubic metre accumulated waste within 12 months. The Corporation officials is in the process of submitting applications to the Board seeking its consent.

ULB's are mandated to construct, operate and maintain waste processing facilities while ensuring appropriate processing for bio-stabilisation of biodegradable wastes and adopting appropriate waste to energy processes.

In pursuance of this mandate, CCMC has constructed 21 Micro-composting Centers (MCCs) in various wards of Coimbatore. These MCCs are proposed to be operated on a Public Private Partnership (PPP) basis

The CapaCITIES project seeks to facilitate technical assistance for the operations and maintenance of these MCCs aimed at strengthening cities' capacities for planning and implementing resilience and GHG mitigation measures for coping with the effects of a changing climate in an informed and integrated manner.

Coimbatore – Need for Solid Waste Management

Coimbatore also known as Kovai is a major city in the Indian state of Tamil Nadu. It is the second largest city in the state after Chennai and 16th largest urban agglomeration in India. The City is known for its dynamic people and excellent infrastructure. Besides Textiles, the city today has evolved itself into a diversified economy with Engineering, Auto Components, Pumps and Motors (Out of every two water pumps produced in the country one is from Coimbatore), Foundries (One among the six major centers in India) and the educational institutions (the highest density in the country: 84 in 75 Square Km) which produce about 40,000 graduates of various disciplines a year. The city generates about 860 metric tonnes waste a day and 59 per cent of it is bio-degradable, which is a little more than 500 tonnes a day.

MCCs will help the corporation process about 240 metric tonnes waste a day and this, in turn, will have a direct bearing the quantity of waste transported to the main Solid Waste Landfill site at Vellalore in that the corporation will have to move only around 300 tonnes waste a day to the Vellalore site.

The corporation has constructed 10 of the 65 MCCs at ₹5.87 crore with its fund, another 10 from the Smart Cities at ₹11.62 crore and the rest under the Swachh Bharat Mission, for which it has got funds from the State Government.

The Coimbatore Integrated Waste Management Company Limited processes 250 tonnes waste a day, the corporation sends more than 50 tonnes to its vermin composting plant and another five tonnes goes to biogas plants. This leaves the corporation with around 200 tonnes a day and this is the waste that it is trying to target and process locally using Micro-composting Centers.

As part of the plans to collect the degradable waste, the corporation will also be investing in small goods carriers and battery-operated vehicles, as the vehicles can be used to collect more waste than what is at present collected with the help of pushcarts and bins.

The officials say the corporation's move is in keeping with the Solid Waste Management Rules, 2016 guidelines of processing waste locally.

The main objectives are:

- Collection, transportation and treatment of all kinds of domestic, market, institutional and street refuse.
- Production and marketing of all kinds of organic manure and to convert it into compost, deal in materials, chemicals otherwise required for the manufacture of organic manure of better value.
- Promote the use of compost and all other kinds of organic manure. Establish demonstration farms and encourage and assist farmers to use compost and organic manure.
- Promote waste disposal and establish or assist associations, organisations and co-operatives with capital, loan, credit resources and the like.
- CMC has adopted a two pronged strategy to achieve the main objectives.
 - o First, the environmental objective is to hygienically dispose the Solid Wastes of Coimbatore city; and
 - o Second, economic objective, is to produce compost to make the enterprise self-sustained.

Basic principles of Solid Waste Management

1. 4Rs: Refuse, Reduce, Reuse & Recycle
 - a. Refuse: Do not buy anything which we do not really need
 - b. Reduce - Reduce the amount of garbage generated. Alter our lifestyle so that minimum garbage is generated
 - c. Reuse - Reuse everything to its maximum after properly cleaning it. Make secondary use of different articles
 - d. Recycle – Keep things which can be recycled to be given to rag pickers or waste pickers (Kabadiwallahs). Convert the recyclable garbage into manures or other useful products
2. Segregation at source: Store organic or biodegradable and inorganic or non-biodegradable solid waste in different bins. Recycle of all the components with minimum labor and cost.
3. Different treatments for different types of solid wastes: One must apply the techniques which are suitable to the given type of garbage. For example the technique suitable for general market waste may not be suitable for slaughter house waste.
4. Treatment at nearest possible point: The solid waste should be treated in as decentralized manner as possible. The garbage generated should be treated preferably at the site of generation i.e. every house

Waste Collection in India:

Primarily by the city municipality

- No gradation of waste product eg bio-degradable, glasses, poly bags, paper shreds etc.
- Dumps these wastes to the city outskirts

Local raddiwala / kabadiwala (Rag pickers)

- Collecting small iron pieces by magnets
- Collecting glass bottles
- Collecting paper for recycling

Micro-composting Centers Model - Coimbatore

The total generation of waste from the households and shops in a typical MCC is about 1.5 MT while garden waste could account for another 1 MT. Of the household waste, wet compostable waste from households is about 1 MT per day

The waste so generated can be converted to compost using appropriate method (may be with the use of a composter which does size reduction as well as mixing of wet waste with the inoculums). This can be followed by composting in trays along a spoke wheel, humidified and turned daily for about 2-3 weeks yielding about one fourth of its weight as compost, which can be cured, sieved and packaged to be sold at Rs. 5 per kg.

A pelletization assembly for cutting, drying, compressing and pelletizing of garden waste could generate about half its weight in pellets to be sold at Rs.8-9 per kg.

The running cost for all activities is Rs.3,02,800/- per month.

It is estimated that about 25 – 30 MT of compost and pellets could be generated per month yielding about Rs.2 to 2.5 lakhs. Sale of recyclables especially paper could help to break-even.

A big drawback could be that residents do not segregate wet from dry waste, which has to be done by waste workers at the segregation area and the company is not insisting that the residents do it.

Process of Composting

The organic content of Municipal Solid Waste (MSW) tends to decompose leading to various smell and odour problems. It also leads to pollution of the environment. To ensure a safe disposal of the MSW it is desirable to reduce its pollution potential and several processing methods are proposed for this purpose.

Composting process is quite commonly used and results in production of a stable product – compost which depending upon its quality can be used as a low-grade manure and soil conditioner. The process results in conservation of natural resources and is an important processing method, especially in agricultural and horticultural areas.

In the case of individual households, small establishments and colonies, vermi-composting which involves the stabilisation of organic solid waste through earthworm consumption for conversion of the organic material to worm casting is being increasingly preferred.

Principles of Composting – Manual and Mechanised Methods

Decomposition and stabilisation of organic waste matter is a natural phenomenon. Composting is an organised method of producing compost manure by adopting this natural phenomenon. Compost is particularly useful as an organic manure which contains plant nutrients (Nitrogen, Phosphorous and Potassium) as well as micro nutrients which can be utilized for the growth of plants. When used in conjunction with chemical fertilisers optimum results are obtained.

Composting can be carried out in two ways i.e., aerobically and anaerobically.

During aerobic composting: aerobic micro-organisms oxidise organic compounds to Carbon di oxide, Nitrite and Nitrate. Carbon from organic compounds is used as a source of energy while nitrogen is recycled. Due to exothermic reaction, temperature of the mass rises.

During anaerobic process, the 244 anaerobic micro-organisms, while metabolizing the nutrients, break down the organic compounds through a process of reduction. A very small amount of energy is released during the process and the temperature of composting mass does not rise much. The gases evolved are mainly Methane and Carbon di oxide. An anaerobic process is a reduction process and the final product is subjected to some minor oxidation when applied to land.

Action plan for Coimbatore

A public-private partnership for Operations and Management of 21 Micro-composting Centers on a PPP basis in CCMC in accordance with applicable laws and regulations including the Municipal Solid Waste (Management & Handling) Rules, 2016..

Rule 15 under the heading “Duties and responsibilities of local authorities and village Panchayats of census towns and urban agglomerations” of the Municipal Solid Waste Management Rules, 2016 is reproduced below verbatim:

The local authorities and Panchayats shall:

- phase out the use of chemical fertilizer in two years and use compost in all parks, gardens maintained by the local body and wherever possible in other places under its jurisdiction. Incentives may be provided to recycling initiatives by informal waste recycling sector.
- facilitate construction, operation and maintenance of solid waste processing facilities and associated infrastructure on their own or with private sector participation or through any agency for optimum utilisation of various components of solid waste adopting suitable technology including the following technologies and adhering to the guidelines issued by the Ministry of Urban Development from time to time and standards prescribed by the Central Pollution Control Board. Preference shall be given to decentralised processing to minimize transportation cost and environmental impacts such as
- bio-methanation, microbial composting, vermi-composting, anaerobic digestion or any other appropriate processing for bio-stabilisation of biodegradable wastes;
- waste to energy processes including refused derived fuel for combustible fraction of waste or supply as feedstock to solid waste based power plants or cement kilns

This means that it is the ULB’s mandate to construct, operate and maintain waste processing facilities while ensuring appropriate processing for bio-stabilisation of biodegradable wastes and adopting appropriate waste to energy processes.

In pursuance of this mandate, CCMC has constructed 6 Micro-composting Centers (MCCs) in various wards of Coimbatore. These MCCs are proposed to be operated on a Public Private Partnership (PPP) basis

The various roles and responsibilities for MCs and Private Party are outlined below:

Each MC:

- Construct and install requisite equipment at MCCs
- Signage space
- Notify residents about the collection agencies and the monthly charges to be paid by them
- Provision of toll-free number facility for citizens to call for doorstep pickup of waste

Private party:

- Branded Signage
- Collection of waste
- Operations and maintenance of Building, Plant, equipments etc at MCC in good condition

- Sale of compost to nurseries at a fixed price
- Provision of designated, trained personnel to staff the toll-free number.

MC shall also create awareness amongst locals for proper waste disposal through IEC and allow private parties should come up with innovative incentive structures that accelerate awareness and leverage on the awareness campaign to reduce waste to going to dump-site. Regular information through APP & Web portal and once a month outreach.

Benefits:

The benefits of the public-private partnership for the city are manifold. These include:

- Job creation potential by private sector enterprise for the collection and awareness drive as well as in composting of waste. Additional indirect jobs in ancillary services such as transport and logistics, advertising and media for campaigns and other services.
- Formalisation of the informal sector brings legitimacy to the workers and sectors, which benefits the informal sector as well through better access to waste, more regular and assured income sources and reduces their business risk.

Financial Model

Assumptions:

Vehicles	No. of Vehicles	Cost per vehicle (Rs. Lac)	Rs. Crore
Battery operated - @ 1 for 400 HH	233	1.8	4.19
Light Commercial -@ 1 for 1200 HH	78	5.5	4.26
Total Capital Expenditure			8.45

(Rs. Crore)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Revenue					
User charges	8.37	8.79	9.23	9.88	10.57
Compost sale	1.85	1.85	1.85	1.85	1.85
Total Sale	10.22	10.64	11.08	11.72	12.41
Expenses					
Labour	5.27	5.64	6.04	6.46	6.91
Fuel Cost	2.40	2.52	2.65	2.78	2.92
Electricity bills	1.60	1.68	1.76	1.85	1.94
Total expenses	9.27	9.84	10.45	11.09	11.78
EBIDTA	0.94	0.79	0.63	0.63	0.64
Interest	0.59	0.53	0.41	0.30	0.18
EBIT	0.35	0.26	0.21	0.33	0.46

Assumptions in the above model include:

- Number of households – based on 2011 census
- O&M operator model and Capital expenditure for the MCCs to be borne by the MC
- Waste picking up vehicle to be owned and operated by O&M operator – all parameters are estimates – to be validated during tendering process by private sector partner.
- Based on no. of Households; 233 Battery Operated Vehicles (BOV) and 78 Light Commercial Vehicles (LCVs) to be procured for collection and transportation of wastes.
- User charges of Rs.75 per Household and an increase of 5% for the first 2 years and 7% thereafter
- The budget for incentive to access micro composting is also indicative and to be validated during the tendering process
- Costs to be borne by O&M operator are funded in the Debt : Equity ratio of 70:30 with a subsidized rate of interest of 10% p.a.p.m

Justification for Approval by MC

NOTE SUBMITTED TO THE COMMISSIONER:

Sub: Solid Waste Management - Collection, Transportation and Processing of Wastes as per SWM Rules, 2016 - Draft EoI - approval requested - regarding

Ref: Solid Waste Management Rules, 2016

Composting means a controlled process involving microbial decomposition of organic matter. Compost that gets generated from composting is a useful agri-input and can replace fertilizers. All bio-degradable waste can be converted to compost using microbial decomposition. This is also useful as it reduces the transportation load of household waste significantly (upto 40-60%).

Rule 15 under the heading “**Duties and responsibilities of local authorities and village Panchayats of census towns and urban agglomerations**” of the Municipal Solid Waste Management Rules, 2016 is reproduced below verbatim:

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- phase out the use of chemical fertilizer in two years and use compost in all parks, gardens maintained by the local body and wherever possible in other places under its jurisdiction. Incentives may be provided to recycling initiatives by informal waste recycling sector.
- facilitate construction, operation and maintenance of solid waste processing facilities and associated infrastructure on their own or with private sector participation or through any agency for optimum utilisation of various components of solid waste adopting suitable technology including the following technologies and adhering to the guidelines issued by the Ministry of Urban Development from time to time and standards prescribed by the Central Pollution Control Board. Preference shall be given to decentralised processing to minimize transportation cost and environmental impacts such as
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This means that it is the ULB's mandate to construct, operate and maintain waste processing facilities while ensuring appropriate processing for bio-stabilisation of biodegradable wastes and adopting appropriate waste to energy processes.

In pursuance of this mandate, CCMC has constructed 6 Micro-composting Centers (MCCs) in various wards of Coimbatore. These MCCs are proposed to be operated on a Public Private Partnership (PPP) basis.

For due implementation of the above initiative it is suggested that an EOI for selection of a PPP partner for O&M of these Micro-composting Centers is called for.

Request Orders please.

Advertisement for EOI



COIMBATORE CITY MUNICIPAL CORPORATION

NOTICE INVITING EXPRESSIONS OF INTEREST

Roc.No. _____

Dated:

The Commissioner, Coimbatore City Municipal Corporation (CCMC) invites “Expression of Interest (EOI) from entities (companies, firms, etc., having a legal status) for Operations and Management of 6 Micro-composting Centers on a PPP basis in CCMC in accordance with applicable laws and regulations including the Municipal Solid Waste (Management & Handling) Rules, 2016.

Reputed firms with experience in Operations and Management of Municipal Waste for the last three years can submit their Expression of Interest. Interested bidders must provide information indicating that they are qualified to perform the services (Brochures, Description of similar assignments, Experience in similar conditions, availability of appropriate skills among staff etc). Consultants may associate to enhance their qualification. Interested entities may obtain further information at the address below from 10.30 AM upto 5.45 PM on all working days from 15-03-2019 to 24-03-2019.

Expressions of Interest may be delivered to the following address on or before 25-03-2019 at 3.00 PM. “The Commissioner, Coimbatore City Municipal Corporation, Town Hall, Big Bazaar Street, Coimbatore - 641001, Tamil Nadu”.

Commissioner
Coimbatore City Municipal Corporation

Municipal Administration & Water Supply Department

From

Dr.K.Vijayakarhikeyan, IAS.,
Commissioner,
Coimbatore City Municipal
Corporation,
Big Bazaar Street,
Coimbatore - 641 001.



To

The Director,
Information and Public Relations,
Secretariat,
Fort Saint George,
Chennai - 600 009.

REF. NO:

DATED: -03-2019

Sir/Madam,

Sub: Coimbatore City Municipal Corporation - Solid Waste Management - Inviting of "Expression of Interest (EOI)" from entities for Operation and Management of six Micro-composting Centers (MCCs) on a PPP basis in CCMC - Publication of EOI Notification in the daily - regarding.

The Coimbatore City Municipal Corporation is desirous of inviting "Expression of Interest (EOI)" from entities for Operation and Management of Six Micro-composting Centers on a PPP basis in CCMC. In this connection I am enclosing herewith the requisite notification for inviting an "Expression of Interest" from entities (companies, firms, etc., having a legal status). I therefore request that the enclosed EOI notification may please be arranged for publication on or before 11-03-2019 in any one of the English daily and any one of the Tamil daily at Tamil Nadu State level once only.

Commissioner

Coimbatore City Municipal Corporation

Enclosure: As mentioned above

REF. NO: 3763 /2015/JN4

OFFICE NOTE SUBMITTED:

Sub: Coimbatore City Municipal Corporation - Solid Waste Management - Inviting of "Expression of Interest (EOI)" from entities for Operations and Management of six MCCs - Publication of EOI Notification in the daily - regarding.

Ref: CapaCITIES Bankable Project - CRCAP Approved date 07-02-2019.

With reference to the above cited, necessary EOI Documents, Notice inviting a "Expression of Interest" have been prepared and put up herewith for approval. The Expression of Interest (EOI) Notice will be published in any one of the English daily and any one of the Tamil daily at Tamil Nadu State level once only.

Subject to approval of the note, draft letter to the Director of Information & Public Relations, Chennai requesting for publication of the notification put up herewith may be approved please.

Commissioner

Coimbatore City Municipal Corporation

Expression of Interest

**INVITATION
FOR**

O&M OF 21 MCC

**INVITING PROPOSALS FOR PARTNERING WITH
COIMBATORE CITY MUNICIPAL CORPORATION
FOR OPERATIONS AND MANAGEMENT OF 6
MICROCOMPOSTING CENTERS**

**FROM ENTITIES AND OTHER INTERESTED PARTIES
BASED IN INDIA**

CCMC

COIMBATORE CITY MUNICIPAL CORPORATION

IMPORTANT DATES

Issue date: February 2019

Last date for proposal submission:

I. BACKGROUND

In the recent years, the value of composting has come under attention and waste segregation, composting and generating energy from waste has been identified as an opportunity. Recognizing the private sector capacities in India in providing various citizen centric and nation building services, the Coimbatore City Municipal Corporation appreciates that a partnership approach is one of the most important modes of implementing important projects, wherever feasible, without compromising on the security and health aspects.

Based on such past successes the Coimbatore City Municipal Corporation is taking a step further in this direction and now seeks Partnership for operating and managing 6 Micro-Composting Centers in Coimbatore. In this respect the Coimbatore City Municipal Corporation wishes to extend the partnership to such eligible entities and organizations in India.

II. MECHANISM:

Government intends to capitalize on the existing base of such Partner in identified areas in the city of Coimbatore (*List of MCCs*)

In order to enter into a partnership, government invites innovative proposals for Partnership wherein the entities can share their technological advancements with CCMC and in such collaboration, safely collect operate and manage micro-composting centers. A partner is expected to bring in requisite technical know-how, infrastructure and marketing which may be required for effective utilization of collection spaces in the identified areas.

The proposal needs to be demonstrated by way of a “Pilot Project” or a “Proof of Concept” which can give evidence of its success and feasibility and ensuring the proposed outcome. Accordingly initially it is proposed that the operations and management of MCCs be commenced in 6 MCCs. This partnership approach is exploratory and open-ended to provide

the partner with the flexibility of setting targets based on actual collections; market conditions; and other key parameters affecting agreed project.

IV. BENEFIT FOR PARTNER:

The Partnership Model would offer partner an opportunity to utilize CCMC's infrastructure including space for Composting and RDF pelletization. It would be a unique opportunity for Partner to make use of such agreed existing resources at each MCC. CCMC will require all residents pay a reasonable price for compost and RDF so produced.

CCMC will organize a campaign for creating awareness about Compost so produced and facilitate the sale of RDF pellets to Cement and Power Plants.

V. ELIGIBILITY:

By taking an inclusive approach, proposals are invited from private entities and other interested parties based in India. All such entities incorporated or formed in India at any time are eligible to submit their proposals. There is no restriction with respect to experience or existence of the entity or its financial strength. General disqualifications such as blacklisting, debarment as per prevalent rules shall apply. CCMC may also set eligibility criteria at a later stage or may prescribe new rules of eligibility at any stage during the selection procedure.

VI. SELECTION:

The process of selection and working with the partner would be as follows:

1. All proposals should be substantially based on the Format of Proposal given in this EOI
(Annexure - 1).

2. All proposals will be reviewed by the Selection Committee. Proposal Selection is based on assessment of capabilities of the interested party regarding their possession of experience, and requisite manpower facilities. The thrust is on Innovation and uniqueness of the proposal which can demonstrate maximum coverage with the utilization of existing resources in order to limit government expenditure for O&M of MCCs. Assessment of the applications will also be based on the strength of the idea, its ability to lead to impact, and the feasibility of implementation.
3. Proposals should specify the intended outcome of the project and describe its key performance indicators/success criteria. Proposals may also include a roll-out plan with potential users/customers and benefits for them, incentives for participants, In case any person or entity has not submitted a business plan or revenue model at this stage but their idea is selected under this EOI, they would have the option of submitting detailed business plan/revenue model at a later stage as well.
4. First screening will be done by _____ to assess level of uniqueness, innovation, clarity of idea and its execution, understanding of challenges and strength of team.
5. After the first screening, the parties of shortlisted proposals will be given opportunity to present their ideas / proposals, followed with detailed plan to further enhance their proposals.
6. The final selection will be the sole prerogative of Coimbatore City Municipal Corporation which will decide amongst the proposals received.

VII. GENERAL CONDITIONS:

1. All the proposals submitted will be the property of CCMC and CCMC also reserves its right to make use of any of the proposal without making the proposer a partner in implementing the proposal.
2. The CCMC reserves its right to add or enhance any condition or criteria for selection.
3. The CCMC also reserves its right to modify the selection process at any stage of the selection process to achieve the objective of this Expression of Interest.
4. Any company, person or entity can submit any number of proposals.

ANNEXURE – 1

All the proposals shall be submitted substantially similar in the form herein below

(Please fill all the fields and mark Not Applicable if the detail required is not relevant)

S.NO.	PARTICULARS	RESPONSE
1	Name of the Company / Organization /Institution /Individual/Head of group	
2	Date of Incorporation / formation	
3	Type (e.g. private company, NGO, Institute, Individual, etc.)	
4	Primary contactable Address	
5	Telephone, mobile, fax and email address	
6	Summary of Proposal (Maximum 200-300 words)	
7	Broad Concept of O&M of an MCC	
8	Are you experienced in Municipal waste processing? If so, please provide your credentials	

Please attach detailed proposal