



Advocacy - Governance - Renewal

About NAGAR:

NAGAR is a not for profit organization established in 2000, born out of the passion of several ordinary citizens with a goal to improve life in the city of Mumbai. Since then, it has been working in the areas of preservation of public open spaces, solid waste management and improvement in air quality. Recently it has added more programs to its list like Efficient road space management, to preserve & restore water bodies & beaches, to preserve and restore Mumbai's historic 'built' and natural heritage and Water Conservation. Its creed has been strong and consistent advocacy with Government and its agencies for better implementation of existing laws, suggesting changes in policies for better governance in civic related issues and working towards urban renewal. It has a vast citizen base spread over the city and networks with other civic NGOs on specific issues.

NAGAR envisages a PEOPLE Public Private Partnership for a Solid Waste Management (SWM) model for the Prime Minister's Campaign - *Swachh Bharat* as below:

DRAFT

PPPP (PEOPLE Public Private Partnership) model
(with reference to Greater Mumbai)

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A. Introduction

NAGAR envisages a People Public Private Partnership model for the Prime Minister's Campaign on *Swachh Bharat* (Clean India). We are delighted by the Prime Minister's efforts of launching a web portal www.mygov.nic.in for citizen involvement in a constructive manner. Making the best of this opportunity, NAGAR proposes the following Model in keeping with the Prime Minister's mission to devise a PPPP Model for Solid Waste Management. Also, we are in process of understanding ward-wise situation of Solid Waste Management in Mumbai so that a comprehensive plan can be chalked out for the entire city, taking into consideration local needs and requirement.

NAGAR is working on various aspects of Solid Waste Management – analyzing policies and laws of the Government (i.e. Central & State laws); research & analysis of ground level situation in Mumbai; networking with stakeholders – Citizens, Government Authorities, NGOs and Agencies working in the field of waste processing & recycling.

B. Vision

- ❖ Target-reduction of waste dumped at the landfills in a phased manner
- ❖ To create assets for the public from waste – ranging from energy to public greening
- ❖ Visual cleanliness in the city
- ❖ Reduce-reuse-recover-recycle-rethink

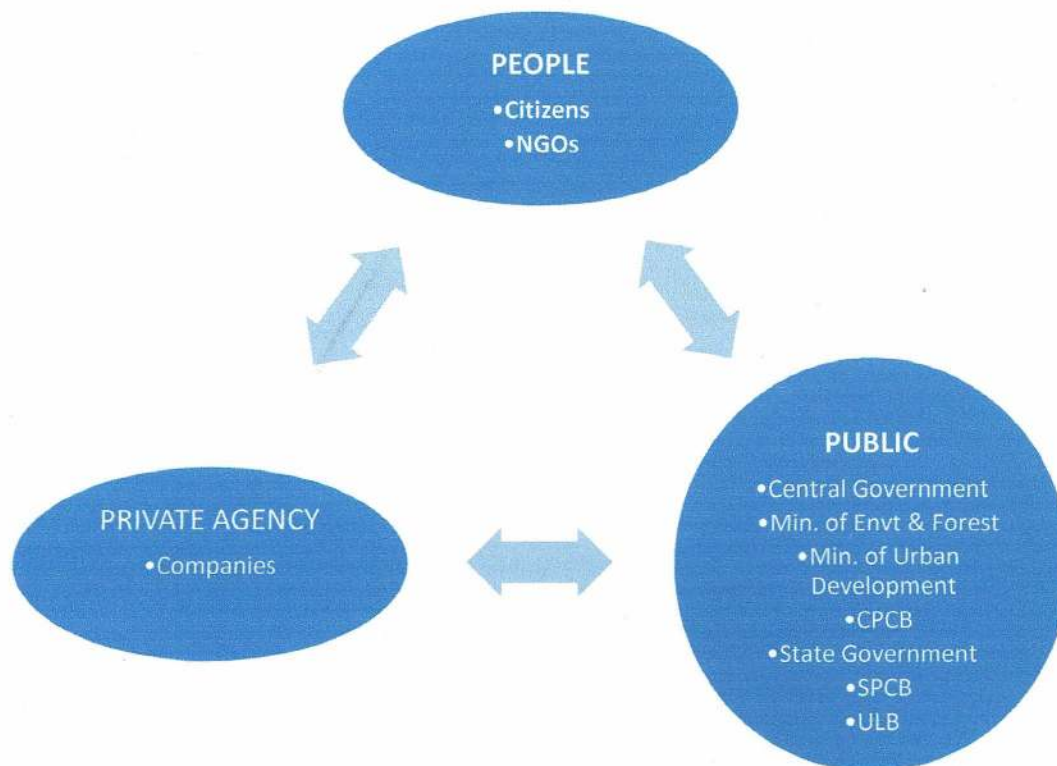
The four important aspects of Municipal Solid Waste Management are:

1. Availability of appropriate infrastructure (equipment & technology)
2. Availability of competent and motivated manpower
3. Availability of appropriate funds to run the above two resourcefully

4. Efficient Management and Operations by professionally trained official

NAGAR proposes that these aspects require appropriate responsibility sharing and profit sharing among the people, public and the private components. It has to be a win-win situation for all to be motivated and keep the consistency of the project.

Taking into consideration the stakeholders & beneficiaries involved, the mechanism to be followed for the PPP model can be illustrated as below:



C. Role of Stakeholders

1. PEOPLE

1.1. Citizens

The citizens form the vital component of the model as their willingness to abide by the rules and actively participate affects the project enormously.

1.1.1. Responsibility:

- i. Segregate waste at source into dry and wet waste.

- ii. Do not throw mix waste in the collection bins provided at various points for collection by MCGM.
- iii. Do not litter on roads.
- iv. Use dust bins provided at public places for its appropriate purpose (dry and wet waste bins)
- v. Link their emails with MCGM website for updates on cleanliness rules or guidelines. Also, citizens can receive updates via SMS.
- vi. Citizens must use the MCGM's grievance redressal mechanism dedicated to complaints related to SWM.
- vii. Participate as a community to guard their street from littering by. By rotation members of every building on that street can volunteer to register complaints. Register complaints via SMS / email.

1.1.2. Rights:

- i. Collection of segregated waste by the waste collecting agencies appointed under PPP Model.
- ii. Information sharing by the MCGM on its website and at ward level by way of monthly meetings as part of Advanced Locality Management (ALM) Scheme.
- iii. Grievance Redressal on negligence to collect segregated waste; provision within MCGM to voice citizens' complaints regarding irregularity, non-compliance and so on.

1.1.3. Privileges:

- i. Rebate on property tax to the society if the citizens adhere to 3R principle – i.e. reduce, reuse and recycle. Preference will be given only to those citizens / residential associations who follow systems of composting and recycling – which are environment-friendly.

1.1.4. Penal Action:

To refer Mumbai's example, Greater Mumbai Cleanliness and Sanitation Byelaws, 2006 has provisions to punish the citizens littering, spitting and urinating in public places by way of charging them a fine. These provisions can be strictly enforced and made more stringent. Also, under the proposed PPP Model, the households, institutions, hotels & restaurants, hospitals, industries / companies and all other waste generators will be strictly penalized for non-compliance to segregation of waste. (Refer Section D pt. 7). In short, waste will not be collected if it is not segregated by people and fine charged for not segregating. Also, there will be fine/penalty charged on people if waste is thrown on the roadside (authority to fine / impose penalty would be conferred on MCGM but complaints of the same will be submitted by the private agency which employs waste collectors)

1.2. NGOs

Non-Governmental Organizations play an important role in educating the citizens, motivating them to participate and also act as a facilitator between the citizens and the government authorities. Also, they are vital resource centers for information and play key role in dissemination of such information. The pilot projects and experimental activities conducted by NGOs provide great inputs for weighing the pros and cons of any scheme or policy. Hence, NGOs can be a good vehicle to gain feedback both for government and the citizen at large. It would be advisable to route in NGOs as an official platform.

1.2.1. Awareness Campaign

NGOs collaborate with MCGM in creating awareness on issues like segregation of waste at source, cleanliness & sanitation drives, educating on rules & penal provisions, motivating the public to keep city clean. Assistance from National Social Service cadets, National Cadets Corps and State level Cadet Corps can contribute to such events. Also, NGOs can conduct training workshops & seminars on Solid Waste Management starting from one's kitchen to big institutions on large scale.

1.2.2. Dialogue with Stakeholders

Public consultation meetings and such forum can effectively disseminate information and explain government's position for implementing any schemes or policies. Also, such platform can act as a ground for presenting innovative ideas and sharing experiences.

1.2.3. Advocacy

NGOs advocate for citizen-friendly policies & laws. They voice public opinion. **NAGAR has done a comparative study of MSW Rules 2000 and the draft of MSW Rules 2013.** It gives in depth analysis of benefits & loopholes in both the Rules. Hence, such information can prove helpful to the government authorities while framing public policy.

2. PUBLIC

The three tier system contributes to Management of Solid Waste at the Central, State and Local government level.

2.1. Central Government

The Central Government (Ministry of Environment & Forest and Ministry of Urban Development) frames rules like Municipal Solid Waste (Management and Handling). The Ministry of Environment & Forest had revised these rules and published it in notification of 2013. Also, a manual on Solid Waste Management is being drafted by the two ministries (Reference: draft manual as of May 2014 available on Ministry's website)

2.1.1 Role

The Central Government plays an effective role in:

- i. Policy formulation & Framing Guidelines (Act/Rules)
- ii. Formation of Research Wing

Contribution & assistance from multiple monitoring and research agencies of the government like CPCB at the Central level, MPCB at the State level, NEERI and such other can be resourceful to improvise on technology and feasibility of implementing any policy.

However, Central government and CPCB can only be effective if they have the authority to penalise the defaulter for non-compliance.

2.1.2. Responsibility

To create a social capital of informed citizenry (not existing as of now)

- i. Framing policies after seeking due public opinion (Public Notification for receiving Suggestions & Objections). Devise a panel of experts (from the Research Wing, subject specific experts and NGOs) for comprehensive policies.
- ii. All research and analysis done by the Research Wing made available to the public online and at concerned department / office. Also, it would be open for inputs from the citizens.
- iii. Review Environment Status reports submitted by the nodal agencies and Maharashtra State Government. Also, give appropriate directives to be implemented in time-bound manner and penalize the Maharashtra State Government for non-compliance by charging pecuniary penalty on the defaulting State or a cut in funds released by the Centre for the concerned State.

2.1.3. Penal Action for non-compliance

The Central Government can charge pecuniary penalty on the defaulting State or a cut in funds released by the Centre for the concerned State for non-compliance of their duty and failure in implementing the laws effectively.

2.1.4. Role of Central Pollution Control Board

- i. Monitor the compliance of laws by the State Pollution Control Body
- ii. Collaboration with the Research Wing

2.2. Maharashtra State Government

The Maharashtra State Government will be responsible in making provisions for adapting Central laws for State & ULB scenario. The Maharashtra State Government frames rules on its own as well. For instance, Maharashtra State Act known as Maharashtra Non-

Biodegradable Garbage (Control) Act, 2006 which has explicit provisions for responsibility sharing and penal provisions for non-compliance.

2.2.1. Role

The Maharashtra State Government plays an effective role in:

- i. Policy formulation & Framing Guidelines (Act/Rules)
- ii. Incorporate lessons on cleanliness at the primary education level as a part of Awareness campaign.

However, State government and MPCB can only be effective if they have the authority to penalise the defaulter for non-compliance.

2.2.2. Responsibility

To build a social capital of informed citizenry

- i. Framing policies after seeking due public opinion (Public Notification for receiving Suggestions & Objections). Devise a panel of experts (from the Research Wing, subject specific experts and NGOs) for comprehensive policies.
- ii. All research and analysis done by the Research Wing made available to the public online and at concerned department / office. Also, it would be open for inputs from the citizens.
- iii. Review Environment Status reports submitted by the nodal agencies and MCGM. Also, give appropriate directives to be implemented in time-bound manner and penalize the MCGM for non-compliance by charging pecuniary penalty on the defaulting ULB or a cut in funds released by the State for the concerned ULB.
- iv. Maharashtra State Government can provide incentives to MCGM performing outstandingly by grading the MCGM and releasing funds depending on the rating. Also, the system of "*Nirmal Sheher*" can be devised so as to raise the level of awareness and incentivize Cleanliness.

2.2.3. Penal Action for non-compliance

The Maharashtra State Government can charge pecuniary penalty on the defaulting ULB or a cut in funds released by the Maharashtra State Government for the concerned ULB for non-compliance of their duty and failure in implementing the laws effectively.

2.2.4. Role of State Pollution Control Board

- i. Monitor the compliance of laws by the MCGM
- ii. Collaboration with the research wing

2.3. Municipal Corporation of Greater Mumbai (MCGM) - Urban Local Body

MCGM implements the laws formulated by the Central & Maharashtra State Government. Also, they submit Environment Status report to the Maharashtra State Government. They receive funds from both the Central & the Maharashtra State Government. Most of the funds from JNNURM scheme are for MCGM solid waste management. Also, MCGM are required to prepare a time bound plan for Solid Waste Management and City Sanitation Plan. However, to be specific about the Municipal Corporation of Greater Mumbai, neither of it is in place.

2.3.1' Role

- i. Implement MSW Rules, 2000 and other rules related to specific wastes.
- ii. Devise a MSW Management plan concerning collection, storage, segregation, transportation, processing and disposal.
- iii. Devise a City Sanitation Plan
- iv. Provide for citizen and MCGM interaction (Saturday meetings with ALMs, as in case of Mumbai)
- v. Disseminate information regarding schemes and policies online and at ward office
- vi. Submit Environment Status Report to the MPCB and the Maharashtra State Government

2.3.2. Responsibility

- i. Set up Grievance Redressal mechanism dedicated for complaints related to SWM – from the citizens & the private agency
- ii. Conduct monthly meetings with resident associations for redressal of complaints. MCGM is supposed to conduct such meetings on one of the Saturdays in every month under the ALM Scheme. However, this is rarely done in practice. This needs to be revived.
- iii. MCGM must assign the contract to a Private agency only after considering the ratings given to that private agency by a reliable Credit rating agency (may / may not be appointed by MCGM). Also, the private agency which has been assigned the task must be assessed on its performance periodically by the Credit rating agency, which MCGM can refer to.
- iv. Contract must be awarded to a private agency that fits in the 'expression of interest' issued by the MCGM. Names of such a private agency, MoU signed between MCGM & that private agency must be made available on MCGM's website. Depending on the population and its need, there should be a limit on number of private agencies involved.
- v. MCGM must conduct awareness campaign in collaboration with a private agency for a specific duration. The campaign can be designed by the private agency, and propagated by both, private agency & MCGM, in collaboration. However, the campaign will have to be funded by MCGM.

- vi. Distribution of CDs/Pamphlets guiding about segregation, composting and so on can be provided to citizens who want to take up such activities at a nominal cost charged by MCGM or free of cost to citizens, if funds for preparing them can be raised from CSR (private agency)
- vii. Also, MCGM can seek help from the State Government or the Film Division to make a documentary on Solid Waste scenario and practices to be followed.

2.3.3. Penal Action for non-compliance

There is an express rule to appoint Nuisance Detectors under the MCGM's Cleanliness and Sanitation Byelaws 2006. MCGM has to effectively implement this system. There are supposed to be 24 Nuisance Detectors in 24 wards of Mumbai. However, every street can play a watchful role in alerting these Nuisance Detectors of any violation of the laws happening on their street. There has to be a proper people & public partnership in keeping the area clean. The authority to fine must be given to the Nuisance Detector. However, the revenue generated by charging a fine must be shared between the informer & MCGM as 80:20.

The Cleanliness & Sanitation Byelaws, 2006 provide for penalty charged on offender. However, it is not strictly enforced. Presently, no mechanism is followed to monitor any of the offences mentioned under the Act. The MCGM can collaborate with NGOs and entitle them to provide a workforce that act as Nuisance Detectors under the authority of MCGM. For this, MCGM must provide some remuneration or stipend which can come from its own corpus or as a CSR activity.

3. Private (companies)

Private agencies would refer to small and medium enterprises as well as big corporate houses. The responsibility sharing and profit sharing between the public and the private has to be fixed before implementing this model. The role played by private agency will be important to build efficient & cost-effective infrastructure and provide competent manpower. The funds can devolve from two sources: a) from MCGM's corpus / State government grant / Central government (under JNNURM scheme) or b) CSR funding. The management and monitoring will basically remain MCGM's responsibility. Also, the monitoring agencies like CPCB & MPCB remain as monitoring agencies.

3.1 Responsibility

Private agency can act as waste-collection agency and employ manpower as 'waste collectors' that can be appointed by housing societies, institutions, corporate offices, commercial buildings and so on. This is on similar lines of appointing security guards from security agencies. The 'waste collectors' will collect only segregated waste and will register

complaints with MCGM for any individual / institution not segregating waste or handing out mixed waste.

The existing labour force with the MCGM will remain under its authority. Also, in keeping with the proposed Solid Waste Management Manual (May 2014) of the Ministry of Urban Development, the informal labour of rag-pickers can be integrated /streamlined with the 'waste collectors' force by giving them proper training and safety gear. This can be done by the private agency that employs 'waste collectors'.

The cost of training given to the existing labour force of MCGM and the informal labour (i.e. the rag-pickers) by the private agency will be borne by the MCGM.

The labour force under MCGM will be governed by government regulations and laws. However, those under private agency will follow Management & Control regulations of that respective private agency. However, the norms & standards maintained by both the labour force must be at par.

Private agency can provide infrastructure facilities like collection trucks, waste bins, processing units, recycling units, composting pits and so on. These can be done on a cost & profit sharing between the public and the private. This will enable the private agency to earn Carbon Credits for itself.

Private agency will have to conduct research and upgrade its technology periodically, with due intimation to the public authority concerned. The use of improvised methods or systems can be approved by the Research Wing set up by the Central Government. The private agency will have to acquire clearance under Environment Impact Assessment from the Ministry of Environment & Forest.

3.2 Privileges

- i. With due upgradation & clearance under EIA, the private agency can working in multiple municipal corporations/ State Governments. Concessions can be given in terms of cutting down procedural hassle with every new authority. Instead, MoU with one district/State can ensure credibility of the agency with adjacent district/State respectively. However, the clearance under EIA will have to be region specific & cannot be used as one-size-fits-all.
- ii. With reference to targets set for processing waste and reducing burden on the landfill, if the appointed private agency completes the task appropriately and in time or before time, it can be awarded for its efforts by the concerned government with a Proficiency Certificate to reduce its EIA hassles with other governments.

iii. Revenue generated from waste processing and penalty charged can be shared between the public and the private as 20:80.

3.3 Penal Action

i. If the private agency that received Proficiency Certificate falters, it will be black-listed for next five years.

ii. Setting Targets to reduce waste disposed at landfill sites; setting targets in a phased manner, to start with target would be around 2 to 5% of total waste generated in the city! Default in meeting the target will attract penal action.

iii. Waste collected by Private agency has to be processed by the same agency or another private agency proficient in the waste-processing field by using innovative & environment-friendly techniques that will be monitored by CPCB & MPCB. Default in meeting the standards or resulting in pollution will attract penal action.

iv. Performance would be assessed & rated by the credit rating agency as decided as per the MoU signed between MCGM and Private agency, special credits would be given for usage of innovative & environment-friendly techniques.

v. Time period: Contracts would be made for a specific duration (say, 2 years) to start with. Report from the monitoring agencies and credit rating agency will enable continuance for a long term (say 6 years).

vi. Periodic grievance redressal meetings with MCGM. Minutes of the meeting to be published online and also sent to the credit rating agency

D. PPP Model in practice

Expression of Interest (Eoi) articulated by the MCGM must adhere to environmental norms and cleanliness & sanitation byelaws. Also, Memorandum of Understanding (MoU) must have time bound schedule of contract and also, level of standards to be maintained by the private agency for collection, transportation and processing of waste.

There should be public consultation meetings on the framework of Eoi and MoU. NGOs can be routed in for this purpose. All information regarding the Eoi and the MoU before final signature must be open for public suggestions & objections. After due deliberation, it must be finalized and published on official website.

Also, the systems established by one official can be changed by the new officer on post only by taking people in confidence and giving reasons in specific with evidence of failure of the concerned policy. No abrupt change of policy is advisable, socially as well as economically!



Segregation

- People - dry & wet



Collection

- Private agency - door to door collection (waste collectors)



Transportation

- Private agency - collection vehicles



Storage

- Public - identify land for temporary purpose
- Private agency - sort for differential processing



Processing

- Private agency - as per type of waste

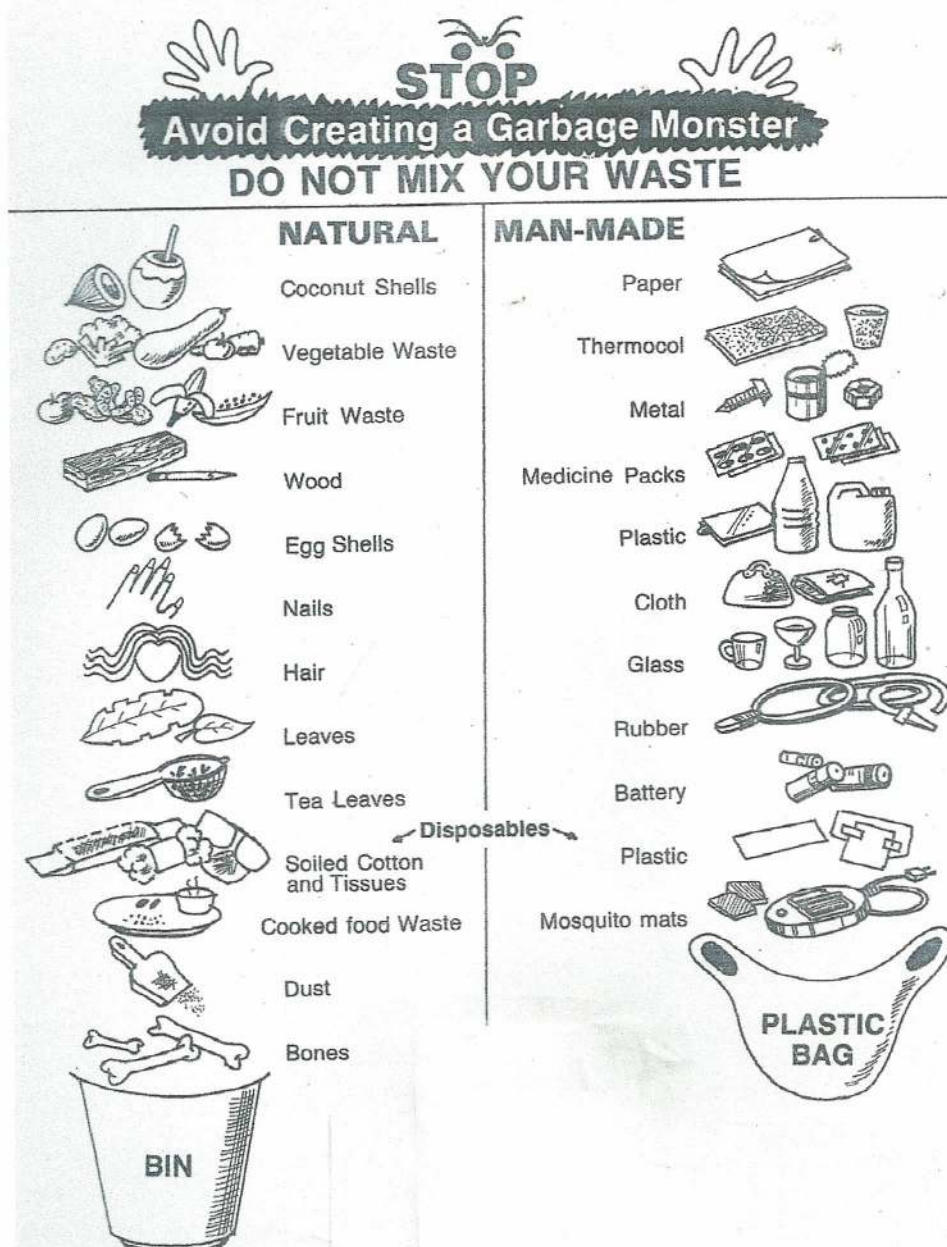


Disposal

- Public - identify landfill site
- Private agency - maintain scientific standards

1. Segregation

Segregation of waste at source into dry waste and wet waste is essential. This would require field study to understand the major waste generators and also target ward-specific reduction in waste generation. **NAGAR has taken up ward-wise study of Greater Mumbai to conceptualize a ward-specific plan for reduction of waste going to the landfill. Presently, we are at data collection stage.**



Source : 'Not Rubbish', Island, Oct 1995

2. Collection

- Collection from door to door by appointed waste collection agencies (private agency) that are appointed by the MCGM on contract.
- Only segregated waste will be collected. Dry waste would be collected once a week; wet waste would be collected every day. A calendar / chart of collection days for dry waste can be provided to the citizens by the respective ward office.
- Complaints will be registered with the MCGM by the collection agency for non-complying citizens / institutions. Also, the citizens can register complaints with the MCGM for non-

compliance by waste collection agency despite segregation. The system of complaint and grievance redressal will be set up online as well as at ward level.

3. Transportation

MCGM must contract with the private agency (same agency that employs 'waste collectors') for availing the waste collecting vehicles. MCGM will have to provide for air quality norms to be followed by these trucks in the MoU. **The collection trucks should have environmental clearance. Also, these trucks have to be closed trucks so that the waste is not littered on roads. The same agency should also provide for road sweeping trucks.**

The employees of the private agency for waste collection and transportation must be trained and work in a schedule (calendar) as circulated to the people by the MCGM.

4. Storage

The wet waste can directly go to the composting units. The dry waste i.e. plastic, paper, glass, wood, rubber, metals, bio-medical and e-waste etc. will be sorted and sent to the concerned processing unit, which would require temporary storage facility. Bio-medical and e-waste will have to be treated and safely disposed. It would be advisable for the public (State Government / MCGM) to identify land which can be used for this temporary purpose.

5. Processing

Processing norms and pollution control norms must be adhered to by the processing agencies (private agency) appointed by contract by MCGM. There should be strict penal provisions for non-compliance and black-listing of companies for next 5 years for the same.

6. Disposal

There should be a target reduction of waste going to the landfill in a phased manner. Every Dumping ground has a limit and extension of this limit must not be allowed by law. Public (MCGM) will identify landfill sites and lay down norms of scientific upkeep. Private agency must adhere to the scientific norms laid down by public (MCGM). Penal action on State Government and the MCGM can be charged for not complying with the norms of landfill site selection. Similarly, penal action can be charged on the private agency for non-compliance with scientific norms.

7. Punishments & Penalty for non-compliance

The punishments and penalties for non-compliance by:

a. **Citizens** – charged with fine for not segregating waste. Also, every citizen who mixes waste at collection points on road will be tracked by CCTV and fined. The punishments can

also extend to simple imprisonment (as in Cleanliness & Sanitation by laws). Strict implementation of these laws is MCGM's duty.

b. MCGM – defaulting ward officer will invite suspension. Also, the State Government will reduce the release of funds provided to MCGM or impose heavy penalty

c. Maharashtra State Government - defaulting Municipal Corporation will face reduction in the release of funds provided by the State Government or impose heavy penalty.

d. The Central & State Pollution Control Boards will not only monitor the functioning of the concerned governments but will have the authority to impose penal action.

e. Private Agency – black-listed for five years and / or charged with penalty on default of environmental norms, deficiency in standards and non-compliance or non-performance of contract.

E. Benefits of PPP Model

1. Social

- i. Cleanliness & sanitation is maintained.
- ii. Reduction in diseases and epidemics, especially, communicable diseases
- iii. Increase in awareness, public participation
- iv. Integration of informal sector through proper training and opportunity for employment through streamlining into formal set-up as 'waste collectors'

2. Economic

In keeping with the principle of **Waste to Energy** –

- i. Use of tested and proved practices at smaller level (like in Cooperative Housing Societies). For instance, composting and generating biogas.
- ii. Generation of energy at large scale by processing waste. For instance, Biofuel
- iii. **Generation of electricity from the garbage** – To some extent, incinerators can be used to tap heat energy and transform the same into electricity and also to charge Molecular Thermoelectric devices which can replace photovoltaic cells used in the generation of electricity from solar energy (*Refer : Websites, pt 4, 5*) While conversion of Waste to Energy through incinerators, the effluent released from incinerators shall not be released in air at all. Instead, the incinerators generating heat energy will be converted to electricity by the processing plants. It would generate huge profit for the stakeholders and also cater to the current electricity deficit.
- iv. **Use of GPS systems** to track the entire transportation process of waste (from collection to recycling site / composting site / landfill site.
- v. The entire process of '**reduce-reuse-recycle-recover-rethink**' can generate huge sources of revenue through the sale of recyclables and the processing of remaining waste. **As evident in NAGAR's pilot project** (*Refer Section F, pt. 1*)

vi. **Employment generation** - Waste pickers (or Rag-pickers) which form the unorganized / informal sector of the economy can be brought under the organized sector.

vii. **Carbon credits** can be generated through many ways for the country. For example, Dhaka in Bangladesh experimented with small community management by setting up community based composting to convert organic waste to resource, thereby generating carbon credits. *(Refer Report, pt 1)*

viii. **Cost-effective products** can be made from recyclable and processed dry waste.

3. Governance

i. Enhanced public participation in the cleanliness and sanitation of their own premises by participating in segregation at source, monitoring & keeping check on defaulters.

ii. Public consultation meetings resulting in valuable inputs for policy and experimental practices for handling and processing waste.

iii. Public involvement in framing citizen-friendly and environment-friendly laws and agreements (like Expression of Interest and Memorandum of Understanding) by way of Suggestions & Objections submitted by the citizens and NGOs.

iv. Updated and informed citizenry.

4. Environmental

i. Less amount of Garbage disposed at the landfill sites. Hence, it would result in creating more space for public. Public Open Spaces and the green cover would increase.

ii. Reduced burden of cost and procedural hassle for city administration while managing the environment standards.

iii. Sustainable use of resources since less energy would be required to manage less amount of waste and hence less air and water pollution.

iv. Existing landfill sites can be used for more productive purposes such as social forestry, public gardens and other recreational purposes.

F. NAGAR's successful Model of PPPP

1. Cuffe Parade Pilot Project



Date: 18th April, 2001

Partners: Indian Centre for Plastics in the Environment (ICPE), NAGAR and MCGM (BMC).

Purpose: To segregate waste as a means not only to ease the municipal burden but also to encourage that it is the most responsible and environment friendly thing to do. The focus was segregation has to become a way of life.

Driving factors: shortage of space for landfills in a city like Mumbai and lack of availability/allocation of adequate funds for waste treatment.

We also had a specific goal: to create a replicable model for the collection, storage and re-cycling of 'dry' waste and only 'dry' waste in Mumbai city keeping within the system the ubiquitous rag picker, traditionally so invaluable in reducing the Solid Waste burden on our landfills.

Area of operation of the project: 52 buildings in Cuffe Parade which had been 'educated' in the past

Time-frame: 3 months

This partnership between the BMC-NAGAR-ICPE was ably supported by the Stree Mukti Sanghatana (SMS), an NGO that works with lady rag-pickers and the local Community Based Organisation (CBO) - the Cuffe Parade Residents' Association (CPRA).

The role of each was clearly delineated:

- CPRA - communication with constituent buildings.
- SMS - hands on education about segregation, appointment and supervision of rag-pickers and monitoring the progress of individual buildings towards segregation.
- ICPE - sponsorship of costs – honorariums, uniforms for rag-pickers, project promotion, misc. expenses etc
- NAGAR - providing administrative support and direction of the pilot project, co-ordination between the various parties and advocacy of the concepts involved.
- BMC - the most important player, responsible for the provision of a tempo service for collection of 'dry' waste from these buildings, as well as a shed (at Suraksha Garden) for 'sorting' and storage of that waste by our rag-pickers.

System followed:

- Waste is segregated by the residents of the area at source
- Daily collection of this segregated 'dry' waste is done in a separate tempo manned by two or three lady rag-pickers, now part of the Stree Mukti Sanghatana (SMS). The tempo has banners advertising the segregation campaign
- This waste is then off-loaded at a 'shed' in the Suraksha Garden, Cuffe Parade.
- Here it is 'sorted' into different categories by the rest of the rag-pickers (they take turns on the tempo and at the shed)
- Then it is stored till adequate quantities of the different varieties of waste are collected (usually for a fortnight)
- This is then sold in bulk for better-than-market rates to a scrap dealer who takes it to Dharavi directly



Ours has been a holistic attempt to avoid the litter and fire hazards that are a part and parcel of the traditional recycling chain, and to facilitate the transfer of waste directly from 'user' to 'destination'.

Progress though steady, was slow. Our own task of co-ordination was immense because of the number of parties involved, the initial lack of co-operation of the residents, and mainly, the lack of speed on the part of the BMC accompanied by its marked reluctance to 'wield-the-stick and stick with it', apparent from the very beginning. It is only our constant monitoring and 'nagging' that ultimately made them do this - to tremendous effect! We made them punish and penalise and convey to residents their will to achieve segregation in the pilot area. The two occasions that they did this at Cuffe Parade at our behest, immediately resulted in better segregation and a jump in 'dry' waste collection. **A high degree of awareness and education could not do what one single belief did – that this time the BMC meant business.**

The time-frame of 3 months for the project proved to be unrealistic and was extended for another 4 months. Similarly, the project rolled out to another 40 buildings with

extension to another 60 on the anvil. It is, in the main, considered to have been a successful project and has received kudos from all concerned. It has grown from small beginnings and continues to grow. This can be clearly seen from the chart provided:

	April	May	June	July	Aug.	Sept.	Oct.	Nov.
No. of buildings	38	45	47	47	51	53	71+11	80
No. of Rag-pickers	5	4.9	6.32	6.15	5.2	5.3	6.12	7
Total Quantum Of 'dry' waste collection (in kgs.)	603	3396.5	5530	4838.5	4731	57715	6574	10847
Total amount of money generated (in Rs.)	1210	9509	14826	14848	14130	20554	19626	30262
Earnings per Day per Rag-pickers (in Rs.)	48.41	69.30	83.78	96.57	93.70	138.84	103.44	144.10

From the 'dry' waste data collected we have collated the percentages of different types of waste as collected and received at Suraksha garden: Paper - 67.68%, Plastic - 28.43%, other - 3.89%.

A quick look at the chart above is a recap of our successes:

1. **Resource conservation:** Presently, over 10,000 kgs. of 'dry' waste per month (in just the pilot area) is recycled. Multiplied manifold this would be a tremendous saving to the economy not to mention its environmental advantages.
2. **Income generation:** Rs. 30, 000 generated in the last month out of unwanted commodities! **Yes, there is money in waste.**
3. **Generation of livelihood:** Seven persons from an under-privileged section of society earning a living, with scope for generation of a lot more employment. **Moreover, a holistic attempt has been made to improve their nature of work e.g. we actively discouraged them from rummaging in garbage areas as it is unhygienic, disease causing and downright inhuman. Their brief was only to pick up segregated 'dry' waste just as it was the declared duty of the residents to take responsibility for waste of their own creation/generation i.e. a duty to segregate waste so that some underprivileged member of society does not have to physically separate this waste after them.**

In a review of this project we feel that the most important factor is that this hands-on project has been an excellent learning experience for all of us. **Perhaps our biggest achievement in those eight months has been in changing the mindset of the people in the project area. In the Cuffe Parade pilot we proved that this could be done if there was the will to do it.**

There are lessons to be learned from this:

- **HOLISTIC GOALS:** Voluminous and clearly visible 'dry' waste has to be reduced in order to make the city garbage free. It is 'dry' waste that litters, 'dry' waste that causes fire hazards when stored in crowded market areas and 'dry' waste that prevents valuable 'wet' waste from being naturally composted when spread on a landfill. Therefore efficient management of 'dry' waste is the goal.

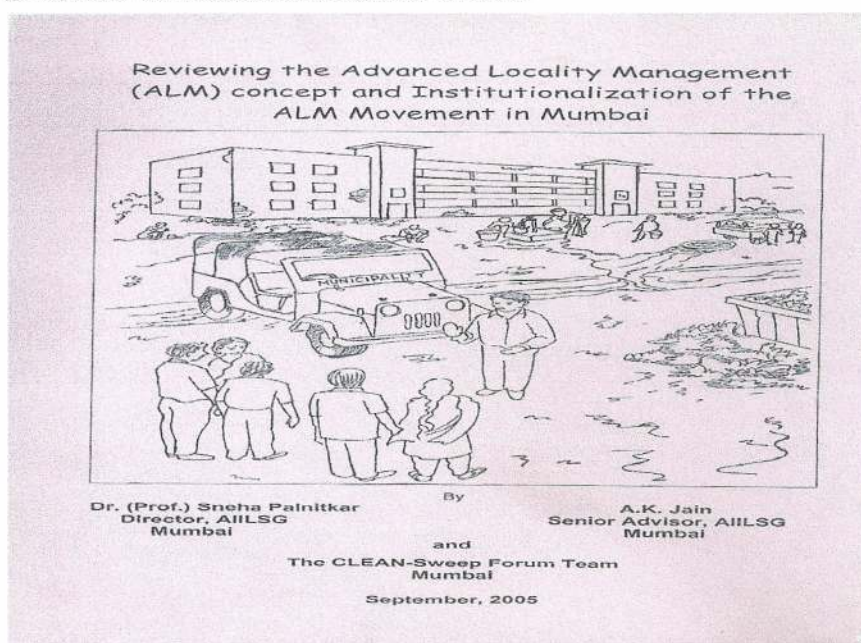
It is also important that everybody benefits from this:

- So the ragpicker is provided with a relatively clean environment to work in. He receives already segregated 'dry' waste to work upon which is definitely more hygienic. He receives better returns because the middleman has been eliminated.
- The resident has a cleaner kitchen and a visibly cleaner environment as the area is not littered with rag-picker harvest.
- Industry is happy as it is receiving valuable recyclable material at a relatively lower cost because of elimination of the middleman.
- The BMC has the most to gain. Its transport costs are reduced, it has tremendously less waste to treat at the landfill stage and the price it has paid is only the increased effort of occasional exemplary implementation.
- **PARTNERSHIP:** This can only be accomplished as a partnership between the user, producer, NGO / CBO, and the BMC. Each has a role to play and must play it responsibly. The citizen must take responsibility for the waste he is generating. Industry must exhibit an '**extended producer responsibility**'. The NGO / CBO are vital in the beginning as a catalyst for change and for co-ordination and direction of the project and the many parties involved. However, it must be a diminishing role as otherwise the set system will never be self-sustaining. As for the **BMC - the buck stops with it!** The bottom line is that the ultimate responsibility is that of the BMC. It must take upon itself the goal of making this work and the only way to do so is to show that it means business, even if it means increasing its work load by occasional levying of penalties. If only the BMC had the will to do this, it does not need the ubiquitous NGO or even sponsorship. It has the funds - it only needs to allocate them well.

Success of this project has emboldened the BMC to go ahead with a plan for its replication in 16 centres across the city. We at NAGAR are sure that this is a replicable model. However care should be taken that the following suggestions are addressed in order to ensure its success:

1. It should be preceded by massive and concerted city-wide media blitz to popularise this concept i.e. awaken the citizens' sense of responsibility as well as remind them of their liability if they do not do so
2. Standard operating procedures be set-up and circulated to all wards as a guideline and some uniformity to be followed so that two citizens from far flung parts of the city are equally aware of segregation and the consequences of not doing it
3. Clear guidelines to, and education of, the BMC staff itself - on segregation, its imperative need, their responsibilities and the consequences of failure
4. Setting-up of clear time-frames for each stage of implementation
5. Pinpoint responsibility at each stage of implementation
6. Formation of a Core Committee to meet on a regular basis for brainstorming and planning
7. Pinpoint the Officer/Leader who will undertake overall co-ordination and monitoring of the project

2. Review of Institutionalization of ALM



A **comprehensive questionnaire**, with two broad headings – information collection and data gathering, was prepared for the field survey. Then, a research team of 5 CSF

members conducted an in-depth survey between mid February and end April 2005, undertaking site-visits of 67 ALMs across the city and collecting useful data from 45 of these – 22 in M-Ward, where a Federation of ALMs actively supports the movement, and 23 ALMs in the rest of the city. Actual weighing was done for three categories of waste, 'wet', 'dry' and mixed. Three market waste collection and disposal projects and two ecotels were also surveyed. The findings were immediately tabulated on to a data sheet followed by preliminary analysis, and the partnering institutions held joint meetings with all concerned throughout the duration of the survey, contents of which are appropriately incorporated in the Report.

The experiences of the survey team were revealing – disappointing sometimes (clearly MCGM had not been at the ALM's doorstep!) but yet largely rewarding and always invigorating. It was heartening to know that though the number of ALMs had dwindled, the 45 ALMs surveyed were still putting in selfless work for a cause dear to their hearts – environment-friendly action against all odds!

The survey set out to confirm or dispel the many assumptions that it was believed were based on lay observations with respect to the functioning of ALMs, so as find ways to redress weaknesses through suitable administrative mechanisms and legislative modifications in the larger interests of SWM. Largely, the **Findings** were encouraging. ALMs survive entirely out of a sense of civic consciousness, with no support from MCGM. The value-add they provide to localities is immense – segregation, composting and recycling, greening and gardening, road sweeping, cleaning their SWDs, in many cases adoption and protection of their neighbourhoods, all at their own, sometimes high, cost, with the capacity to do much more. While there is a high degree of awareness about all aspects of SWM and its effects on the environment, this does not always translate to effective segregation, though this flaw is to be placed at MCGM's door. Mixed waste quantities, therefore, are high – still the largest component of total solid waste. Contrary to common belief, public space is not the preferred location for waste treatment. This little snippet of exemplary civic consciousness must be kept in mind when schemes advocating the use of public spaces for all sorts of activity are expounded. In fact ALMs have shown a marked preference to composting in neat and compact boxes which come in no one's way, not even parking, or inconveniencing pedestrians even when they are placed over SWDs. ALMs also provide a fair amount of employment for unskilled labour. Single building units are found to be the most efficient, while personality-based units are not working as well as they did initially. The 'Lane' model, though more economical, is not a prolific one and only 11 successful lanes were observed.

However, despite the many difficulties ALMs face, notably financial constraints, lack of any kind of support from MCGM (applicable to a gamut of activities), and non-cooperation from residents, the concept of the ALM has completely captured the imagination of the people! Across the city people are convinced that the ALM movement can be revitalized if suitable corrective action is taken by MCGM. **Most would be happy to see the ALM revived as originally conceived, with its tenets implemented by MCGM in letter as well as spirit.** Expectations from MCGM are numerous, as are suggestions for revival of the ALM. (The 'actionable' suggestions from these are factored into the recommendations).

In an **analysis** of the full picture and value generation of the ALM movement today, as has emerged in the course of the Study, the chart below, also in summary, is exemplary. (Inert wastes could not be quantified).

Consolidated Quantitative Data of ALMs Surveyed in Mumbai

Sr. No.	Details	M Ward	Rest of City	Total
1	No. of ALMs surveyed	22	23	45
	No. of residents (at 5 per family)	25830	63015	88845
2	Total Waste generated in the ALM (minus inert)	1759 kgs	4405 kgs	6164 kgs.
2.1	Waste not going to dumping grounds	1210 kgs.	2228 kgs.	3438 kgs.
2.2	Percentage of total waste not going to dump	69%	51%	56%
2.3	'Dry' waste not going to dump	211 kg	795 kg	1006 kg (16%)
2.4	'Wet' waste not going to dump	999 kg	1433 kg	2432 kg (40%)
2.5	Mixed waste still going to dump	549 kg	2177 kg	2726 kg (44%)
3	Waste generated p. family (dry+wet+mixed)	0.340 kg	0.350 kg	0.345 kg avg*
4	Waste saved from dump per family per day	0.234 kg	0.177 kg	0.190 kg avg

4.1	Total amount saved by ALMs for MCGM @ Rs. 1.60 kg. per day/ per month	Rs.1936 per day Rs. 58080	Rs. 3565 per day Rs. 1,06,950	Rs. 5501 per day Rs. 1,65,030
5	Compost generation per month	3000 kg	4300 kg	7300 kg
6	Employment Generation Full/part time workers	7 / 26	65 / 20	72 / 46

Source: ALM Survey, CSF/AIILSG, 2005

* An unusual finding of the survey is that the average waste generation per family (excluding inert wastes) as seen in ALM areas, works out to only 345 gm, i.e. only 70gms per capita. It may be worthwhile for MCGM to look into this at a later stage.

The survey clearly shows that where Cooperative Housing Societies pay the cost of composting themselves work goes on more smoothly (even if more expensively!) Lack of good segregation also increases the cost of composting because more labour and time is involved. The 'Lane' model is most economically efficient but not a currently prolific one, and needs to be suitably incentivised if it is to become the norm. Compost produced is usually used by the ALM.

The above analysis clarifies that a mere 45 ALMs, 90,000 people, save MCGM from carting 3.44 tons of waste to the dump, Rs. 5500/- per day and Rs. 1,65,030 per month. If this is projected to the estimated 2000 tons of domestic waste said to be generated daily by the city, then the estimated cost savings can be Rs. 32,000,00/-. These are **immense cost benefits!** The recommendations then are based on these value-additions as well as the sense that MCGM needs to not only preserve the commitment of these remaining few ALMs, but also motivate numerous others to follow their example, as much for the cost savings involved as the environmental gains accruing from holistic management.

The **Legal and Institutional Framework** for the kind of formal bonding needed to empower ALMs is provided in the MSW Rules 2000 itself, which mandates participation of the community. Section 50TT of the MMC Act opens the doors of formal engagement of civil society organizations in municipal governance. It is feasible then to accommodate ALMs through this provision. Also, section 63A of the same provides for outsourcing of municipal functions to agencies appointed by MCGM. ALMs undertake

many aspects of waste management (excluding transport and disposal at landfill) so the study suggests that ALMs can be treated as such agencies with a few waivers. Cooperative Housing Societies (CHS) too, some of whom have proved to be excellent models in the Study, can be mandated to compost their waste. Suitable amendments in the Bye-laws of the CHS Act would then need to be made.

The Study has successfully established that the ALM concept is a viable system for citizen participation. To make it truly effective and multiply it manifold some proactive steps need to be taken by MCGM. The ensuing **Recommendations** are merely an attempt to show the way, facets to be placed on the discussion table as part of a consultative process with MCGM as the lead partner.

Some of these revisit the old ALM concept but factored in with greater thrust and vigour. Thus a fully empowered ALM cell within MCGM is recommended, this time blessed with adequate resources, measurable targets and holistic vision, which does away with the nodal officer, but adds the corporator, and the new post of AE (Environment). This cell must be empowered by electronic technology, a comprehensive 'Management Information System' and regular updating. Inspired by ALMANAC, the Federation of M-Ward, where there are almost as many waste-managing ALMs as the rest of the city, this study recommends that MCGM officially facilitates the formation of such federations in all the wards, representing active ALMs and incorporating new members as more ALMs are born. These federations could then be registered as Trusts and receive and disburse the ALM fund. In time an apex federation for the city could also be formed.

Incentives are a must for proliferation and could be in cash and kind or both. These could be as a percentage of savings accruing to MCGM, buyback of compost at a reasonable price, a scheme of compensation after the fact (i.e. after verifying their activity for a 'try and watch' period of, say, a year). A system of gradation and star status would be exciting and ensure growth of the concept, cash prizes being given at the end.

Commissioning large projects is highly recommended by the Study. 13.5 tons per day is saved by just three currently existing projects surveyed. Novel projects should also be commissioned such as within or adjoining marketplaces. MCGM must make it mandatory for all clubs, hotels, restaurants, marriage halls etc to compost their waste after the example of the Cricket Club of India, which treats 350 kgs per day. Cooperative Housing Societies must be facilitated for civic-citizen partnerships; segregation must be effectively implemented and **composting made mandatory after first putting in place incentives and pay-back for this work**. Rag-picker organizations deserve support and every effort must be made by MCGM to get rag-pickers off the roads and into projects

run by these organisations. The Study recommends a complete 'dry' waste management plan, not detailed here, and recommends a holistic plan for inert wastes (though out of the scope of the Study). And above all the Study recommends setting up an Independent Monitoring Body to ensure efficient functioning.

The events of 26 / 7 / 05 have shown beyond doubt that garbage on the streets compounded the natural disaster in Mumbai. Serious note needs to be taken of this report by all concerned as civic-citizen partnerships as exemplified by ALMs can go a long way in holistic management of waste. The partners of this study are pleased to offer their services to MCGM in implementation of the final recommendations that come out of discussions stemming from this report.

Also, NAGAR has done a comparative study of MSW Rules 2000 and the draft of MSW Rules 2013.

NAGAR's work in progress

Field analysis – collecting information from every ward under MCGM and formulating ward specific plan based on above model

G. NAGAR's suggestion

Prepare a "Cleanliness Code" by collating all laws, rules and regulations with regards to Solid Waste Management, cleanliness, sanitation & waste-specific laws in one place for easy reference.

Some Teething issues the Public and Private need to resolve:

1. Revenue sharing between Public sector and Private agency should be done equitably
2. The existing workforce in the MCGM will have to work at par with privately employed labour – with reference to training, safety gear and performance.
3. There is a need to review the current contracting system in MCGM.

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