Solid Waste Management Strategy
Guiding Principles and Strategic Options

By

MaRGG
MANAGEMENT RESOURCES FOR GOOD GOVERNANCE
With technical assistance from
ITDG
INTERMEDIATE TECHNOLOGY DEVELOPMENT GROUP

for

Sri Jayawardenapura Kotte Municipal Council
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Foreword

Commissioned by UN-Habitat through the International Research Centre of the Netherlands at the invitation of the Sri Jayawardenapura-Kotte Municipal Council, MaRGG prepared this important strategy document within three months. MaRGG was greatly assisted in the task by the technical assessments and reports prepared for the purpose by ITDG – Sri Lanka. A brief note prepared by National Environment Research & Development Agency (NERD) was also helpful.

To assess the impact of the environment improvement activities carried out by the Municipal Council, MaRGG conducted an impact survey assessing the results of the innovative distribution of compost bins to over 2000 household during 2001-1004 and also held a series of mini consultations with a large number of stakeholders including community groups, NGOs, CBOS and the private sector ascertaining their views, perceptions and vision about urban environment in general and the city’s solid waste management in particular.

ITDG Sri Lanka conducted a series of technical assessments of the Bio-gas project and Waste Recycling project that the Municipal Council was experimenting with for some time. NERD too provided a technical paper assessing the economic feasibility of Bio-gas in an urban environment.

The Sri Jayawardenapura-Kotte Municipal Council and the Ministry of Environment coordinated the exercise through periodic progress review.

What follows is the synergistic outcome of this multi-agency effort. As a result, the Sri Jayawardenapura-Kotte Municipal Council has become the first and only local government authority in Sri Lanka to have a comprehensive city-wide strategy for solid waste management

There were many dedicated partners in this task. Apart from the ones mentioned above, we are grateful to Mr. Sarath Fernando, the Municipal Commissioner, Kotte, Ms. Padmini Batuwitage, Mr. Ranga Pallawela of ITDG Sri Lanka and Mr. U. G. Ekanayake, the Development Assistant of Kotte Municipal Council for their guidance and assistance.

Leo Fonseka
President
MaRGG (Management Resources for Good Governance)
Executive Summary

Since the Nineteen Eighties the Sri Lankan urban society, in general, was taken unawares by the rapidity of economic liberalization and globalization. The society was not ready with adequate mechanisms to cope with the resultant glut of a market with a large variety of disposables. The conventional solid waste management systems are being taxed to the maximum and are being challenged as land fill sites are hard to come by. There is a need to look at the problem in its totality from a new perspective.

The proposed SWM strategy, developed under the auspices of the Basic Urban Service initiative of UN-Habitat and International Resource Centre in the Netherlands, aims at providing the Sri Jayawardenapura Kotte Municipal Council with a vision and methodology to address the problem of solid waste management in the city. While a good part of the daily volume of garbage generated in the city is well managed currently, it is the unmanaged part that is nagging and irritable. The strategy looks at the problem as part of the total environment planning issue. It is based on the following guiding principles.

Guiding Principles

The SJKMC Strategy is based on a series of broadly accepted guiding principles. They are:

- The solid waste issue is much wider than SWM
- Don’t waste Waste.
- Lack of financial resources is not the main issue.
- Landfill is only the last resort.
- Recognize the Informal sector as a vital partner.
- People need affordable solutions.
- Promote and facilitate peoples’ participation.
- Develop stakeholder partnerships.
- Administrative and institutional changes are vital for an effective EPM.
- Free services are less sustainable.
- Documentation is extremely important for continued planning.
The Strategy

The proposed strategy is not a monolithic collection & disposal system. Instead, it proposes to employ a multi-pronged approach that revolves around the ‘4R’ participatory principle of Reduce, Reuse, and Recycle & Reject. The strategy employs six main elements. They are:

1. Engaging an affordable mix of appropriate technical options to Reduce, Reuse, Recycle & Reject.
2. Involving all major stakeholders in the implementation
3. Promoting Private-Municipal Partnerships
4. Strengthening institutional SWM capacity of SJKMC
5. Influencing national and provincial level policies & program support
6. Enforcing laws and policy

1. **Engaging an affordable mix of appropriate technical options to Reduce, Reuse, Recycle & Reject.**

   The strategy is based on the broadly accepted “Hierarchy of waste management” which gives a priority listing of the waste management options available. The hierarchy gives important guidelines on relative desirability of different management options.

   The Municipal Council will emphasize the use of an affordable mix of appropriate technical options and thus will cease to depend solely on the conventional collection and disposal method. The proposed mix of options is:

   - Creation of an environment friendly, eco-sensitive city
   - Promotion of waste reduction at the source of generation
   - Separation of waste at source of generation
   - Return of Recyclable material to the market.
   - Composting & home-gardening
   - Research into anaerobic digestion
   - Scientific handling of clinical and hazardous waste
   - Door to door collection of household waste
   - Set up polluter pay system for special waste like demolition waste, some hazardous waste etc.
   - Sanitary landfill as the last resort.

2. **Engaging the major stakeholders in the implementation**

   Stakeholder participation is the fulcrum of the new strategy. The strategy is built on the premise that solid waste management is not a mere public health engineering exercise. It requires the participation of every single resident and user of city facilities. SJKMC will use the following approaches to mobilize their cooperation and support.

   - Creation of Institutional mechanisms such as working groups and regular city consultations to involve the residents individually and collectively.
   - Conduct of community-based civic education programmes.
   - Setting up Ward level Environment Management Committees (EMC) in each ward under the leadership of the clergy.
   - Setting up of Lane Committees for environment
   - Revitalizing School Environment Committees to get involved in social mobilization.
   - Publication of waste collection schedules
   - Promotion of urban horticulture.
   - Recognition and facilitation of the private informal sector.
   - Engagement and facilitation of NGOs and CBOs.
3. Promoting Private-Municipal Partnerships

The proposed strategy strongly hinges itself on partnerships between the municipal council and the private sector. Privatization of environmental services will be done with cautious optimism ensuring the highest levels of transparency and promoting appropriately designed linkages with the informal service sector so as to prevent marginalization of the poor who currently depend on urban solid waste for their livelihood. The strategy will promote:

- Continued engagement of the private sector.
- Street beautification through private sector participation.
- Setting up of a PPP Forum
- Assistance to recycling industries.
- Stricter environmental appraisal of construction plans.
- Stricter fines for breaches of SWM contracts.
- PPPs to promote 4R.
- Incentives to private sector based on quarterly rapid environmental assessments.
- Using the private sector as a thinking pad for municipality.

4. Strengthening SWM/EPM Institutional Capacity of SJKMC

The Municipal Council will pursue the following to improve its institutional capacity to address EPM and SWM issues.

- Comprehensive environmental approach.
- Non-negotiable emphasis on Waste Reduction.
- Restructuring of municipal institutional arrangements
- Decentralization of municipal operations.
- Capacity-building for Decentralized SWM.
- Staff mobilization, training and education.
- Strengthening the Municipal Standing Committee.
- Formulation and follow up of a Strategy Implementation Plan.
- Improved public relations.
- Regular process-documentation.
- Computerized Complaints Redress System.
- Creation of a Vigilance Squad on Environment.
- Improved Management & Monitoring:
  - At the City Level: The Municipal Standing Committee will continually review the progress assisted by the proposed Working Group on City Environment. It will be called the SJKMC Environment Taskforce which will meet monthly.
  - At the Ward Level: The progress will be monitored and supervised by the Ward-level Environment Committee which will meet monthly or more regularly when needed.
  - At the Community Level: The Lane Committees will be responsible for the management and supervision of waste collection and disposal. It will also promote and monitor household level compliance with the 4R principle.

5. National and Provincial level Policy & Programme Support

- The SJKMC will continue to help the Central Government with field lessons, views, comments and suggestions to regularly update the existing EPM/SWM policies and guidelines.
- Researching for new technologies is beyond the capacity of any single local body. Therefore, the Government of Sri Lanka or the Western Provincial Council to intensify Research and Development
unit to search for new and updated technologies. Intensified R&D efforts are needed to retrieve energy from waste.

- Continued support from the Provincial Council and Central government to ensure the continuity of process-oriented initiatives such as SCP and BUS Programmes.

6. **Strict enforcement of Laws & Policy**

- This Strategy aims at helping the SJKMC implement the National Strategy for Solid Waste Management in a manner that suits the local conditions. It derives power from the said National Strategy, the National Environment Act and the Municipal Councils Ordinance.
- The Working Group will set up a special study group to assess the existing legal and administrative provisions that govern solid waste management in the city and to propose appropriate revisions to make the frameworks more resident-friendly, efficient, speedy and pro-poor.
- The Working group will help the related Standing Committee review the available Environmental bye-laws, starting with SWM, and implement it with immediate effect giving wide publicity followed by community level public education.
- An effective punitive action process will be enforced as a deterrent, preceded by a time-bound phase of public education, domestic sensitization and social mobilization to help enforce laws and policy.

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**Solid Waste Management Strategy of Sri Jayawardenapura Kotte**

**The Purpose**

*This Strategy document is in three parts. Part I provides gainful insights into the issues related to Solid Waste Management in Sri Jayawardenapura-Kotte Municipal Area and Part II offers the Guiding Principles and Technical Options that will be the fulcrum of the defined Solid Waste Management Strategy of the SJKMC area. Part III in a separate volume contains a compendium of important documents generated by MaRGG and ITDG during the SWM fact-finding exercises conducted under the Basic Urban Services (BUS) Programme.*
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Solid Waste Management Strategy of Sri Jayawardenapura Kotte

Part I
The Problem Statement

Introduction

Rapid urbanization has made solid waste management a serious problem today. The perception of the people has always been that it is a responsibility of the local authority. Local authorities are constitutionally bound to keep their territories clean. For some time now, many local authorities have been experimenting with several innovative & participatory methods of Reduce, Reuse and Recycle. Over the past four years, Sri Jayawardenapura Kotte Municipal Council (SJKMC) too has been engaged in experimenting with new technical options and administrative processes to find innovative methods to address solid waste management more effectively. Under UN-Habitat sponsored Sustainable Cities Programme, it has tried out various innovations, particularly by promoting household level composting and bio-gas generation.

Invited by SJKMC, MaRGG undertook a survey to assess the impact and gaps of the aforesaid compost barrel project. The survey covered a sample of 252 houses representing 12.6% of the bin recipients during October – November, 2004. A pre-tested questionnaire was administered for the purpose. In addition, MaRGG conducted a series of mini consultations to obtain the views and suggestions of a representative sample of the main stakeholders in solid waste management. The findings and ideas that emerged from these two exercises, the observations of several visits to the bio-gas plant the Vajira Home and the municipal waste recycling centre in Baddegana and an extensive review of existing literature on the subject have helped produce this Report.
Waste in SJKMC: The Volume and Sources

The sources of Origin

As per municipal records, SJKMC territory generates approximately 140 metric tons of waste daily and the volume is increasing. This waste is generated at many different locations. For easy comprehension, these locations can be grouped into ten main sources. The volume of waste increases substantially during religious, cultural and other national festive seasons such as New Year, Wesak and Christmas. Occasionally, public meetings, demonstrations and political rallies litter the city at different points. Elections are particularly difficult periods for SWM in the city. Buntings, banners, flags, posters and other propaganda material pester the solid waste personnel throughout the city during this period which lasts not less than three to four months at any given election. There are ten main sites that generate solid waste in the city. They are:

- Esplanades & Public gatherings
- Residences
- Schools & Public Institutions
- Religious & Pilgrim Centres
- Bus Stops & Railway Stations
- Nursing Homes & Medical Institutions
- Markets, Shops, Pola & Pavements
- Small & medium Manufacturing Units
- Commercial Establishments
- Construction & Demolition Sites

Composition of Waste

Waste composition data are very important in developing any integrated solid waste management strategy. Their analysis offers important vistas to the form, quantity and quality of different components of the city’s solid waste stream and provides important leads for selecting appropriate technologies for their handling, processing and treatment.

The waste composition survey in Kotte in 2005 is depicted in figure 1 below. This is the output of a total city population of ………… The demographic projections expect the SJKMC population to become ……………… Therefore, it is recommended to carry out such analysis at least once in two years as the composition may change with the changing demography and socio-economic behaviour.
Waste Disposal Methods

A good part of the generated waste (100 MT) is handled by the collection and disposal services provided by the Municipal Council and, since of late, through private sector out-sourcing. On a visual survey and comments received from residents during the mini consultations, this amounts to about 75% of the total waste generated in the city. The Council adopts two main methods for the purpose.

- Door-to-door waste collection services and subsequent disposal at dumpsites by the municipal solid waste management personnel.
- Out-sourced waste collection and subsequent disposal at dump-sites by a private company

Of the remainder, around 7-10 % is handled at various stages by rag-pickers, sweepers hired by households, informal sector waste collectors and a minute fraction of households using home compost bins.

Under the Sustainable Cities Programmes, SJKMC has also taken several small-scale initiatives to introduce some non-conventional methods of waste reduction. They include generating bio-gas, separating waste at source and issuing 2000 compost-bins.
Problems in Waste Management

Solid Waste Management in SJKMC area is affected by several major problems. They include:

Inadequate national policy and support

Coercion without assistance: The national Strategy on Solid Waste Management and provincial level policies and strategies are not adequately harmonized with the needs and capabilities of the local governments. SJKMC is no exception. The existing policy and nationally promulgated strategies are calling for ideal municipal conditions for zero-waste without any serious attempt to assist the local authorities to build their internal capacities. The Supreme Court too is exerting pressure on the local bodies without exerting corresponding pressure on the higher levels of government. Coercion without assistance will not help deliver the goods. As explained here in this chapter, the local authorities like SJKMC are handicapped by a blistering array of problems which are insurmountable in the short term without adequate financial and technical support from the national and provincial level governments.

Lack of landfill sites: Like all other municipal councils in the Colombo Metropolitan Region, SJKMC has been struggling to find suitable land for sanitary landfilling. In a highly urbanized region, finding large extents of land away from main habitations is difficult. With increasing levels of public awareness on the health risks of dumpsites and growing public aversion to regular plying of garbage trucks through their localities, the search had always been futile. The attempt of the provincial government to consider SWM as a regional issue and thus find a common site for landfill too has failed. A large part of the SJKMC territory consists of low-lying and marshy areas. Therefore, necessarily, landfill sites are not available within the city. The Provincial government which only has the authority over allocation of lands must step in to solve the problem.

Absence of a city strategy

The Absence of a City-level SWM Strategy: The Sri Jayawardenapura – Kotte Municipal Council does not have a solid waste management policy of its own. As a result, SWM is viewed solely as an engineering responsibility for collection and disposal. Solid waste management is no more a technical issue. It needs social, fiscal and administrative solutions as well. Under the UN-Habitat’s SCP programme, the city administration has begun to take a more comprehensive look at the problem. The current exercise is a result of that new view.

Conventional Approach: The city’s current approach to solid waste management system conventional. Its stress is on collection and disposal and not on reuse and reduction. This approach does not encourage the residents to enter into any obligatory social partnership with the municipal SWM effort. ‘We dump – They collect’ is the
general attitude that had been cultivated among the residents by this approach over a long period. SWM is not their concern. It is a municipal responsibility.

**Non-recognition of the role of informal service sector:** The informal sector service providers such as the rag-pickers and their agents remove a considerable quantum of daily waste from the city streets. Together, they make an enormous contribution to urban solid waste management in the city. Cities like Chennai and Pune in India have begun to recognize this contribution by facilitating their work through the issuance of identity cards, insurance cover, uniforms etc. Such recognition is long overdue in Sri Lankan cities.

**Lack of Institutional Capacity**

The municipality claims that it lacks financial & human resources to address solid waste issues effectively. While this claim needs careful study and analysis, particularly in the light of some of the observations made in this document, there is undoubtedly a human resource issue that is affecting the efficiency and effectiveness of the SWM team of the Municipal Council. None of the team members has had any comprehensive training in SWM. Under the circumstances, they have had very little opportunity to expand their knowledge horizons and enhance the technical know-how. They need exposure to modern SWM applications.

**Lack of database and record keeping:** The city does not have a functional record keeping method to assess the ward-wise and street-wise volumes of waste handled by the Council. As a result, even the officially stated figure of 100 MT of waste daily is an estimate. Based on the findings of the MaRGG survey on the use of compost bins annexed hereto, there is reason to believe that this figure is an over-estimate. In a city where the housing stock is around 32,500 units, the generation of waste from residential areas will not be more than 60 metric tons a day. When waste from institutional and commercial areas is added, the total could be around 80-85 MT. What is stressed here is that without adequate record keeping and realistic databases it is difficult to improve the quality of planning and delivery of basic services in the city.

**Slow pace of new initiatives:** As a local authority, SJKMC stands out in its efforts to address the solid waste problem. Moving away from depending solely on conventional approaches, it has experimented with several new technical options to address the issue. Home composting, bio-gas generation, separation at source and promotion of collection centres are some these initiatives. The UN-Habitat sponsored assessment of the home composting initiative confirms that, if it is applied universally to cover the whole city, the volume of household waste that comes to the municipal solid waste stream can reduce drastically. The bio-gas experiment too has proved that, if the necessary technological modifications are possible to permit daily intake of waste into the digesters instead of the current batch by batch method, bio-gas is a capable medium to effectively address the problem of market waste in the city. However, the Municipal Council neither has funds nor the partnerships to take the allied administrative risks to make the required city-wide quantum jump to ensure that these solutions are universally
replicated. Though funds are an obvious constraint, the Council will strive to build partnerships with public and NGO sectors to achieve this goal.

**Lack of Partnerships**

The municipality has engaged the services of a private company to assist it in solid waste collection and disposal. It appears to be working well. But, for better results, more partnerships must be built.

**Modal defects in privatization:** Privatization is a tool to strengthen municipal services but, private monopolies can defeat this purpose by taking city authorities to ransom through flash strikes and work-halts as is frequently experienced in some of the other privatized sectors of the country. An illustrative case in point is the March 2005 SWM debacle in the Colombo Municipal Council area.

Moreover, the payment mode currently agreed with the private sector partner appears to contradict the 4R principle. Because they are paid for the volume of garbage collected, the private sector partners are not inclined to play a constructive role in promoting waste reduction and separation at the point of origin.

**Lack of Public Cooperation**

**Negative public perception:** The average resident views SWM as a municipal responsibility. The general public carries a negative perception of the role played by the local body mainly because of the conspicuous quantities of waste lying uncollected on city roads for days. At the same time, there is widespread resistance to the call for separation of waste at household level. It is viewed as a move by the municipality to shy away from one of its customary responsibilities and hand over the same as a responsibility of the households. This lack of civic awareness and public cooperation has always plagued the municipal efforts to keep the city clean.

**Absence of participatory mechanisms:** The city administration does not have adequate institutional mechanisms to engage the residents, public organizations, NGO and other stakeholders on a regular basis to assist in indecision making and programme implementation. The role that these stakeholders can play in educating the masses and mobilizing their communities has not been adequately recognized. The working group mechanism introduced to the city hall by the Sustainable Cities Programme in 2001 has not yet been able to get itself rooted in the institutional set up of the municipality.

Any future strategy to streamline solid waste management in the city will be effective only if it can directly address these drawbacks. The strategy proposed here is an attempt in that direction.
Conclusion

The above problems and drawbacks call for formulation of a forward-looking zero waste strategy for the city. For decades, solid waste management of the city has been considered primarily as an engineering responsibility of the municipal council. Resultantly, collection and disposal of waste had been the only solution using conventional methods. Time has come now for the municipal council to adopt a new guiding principle and strategy for solid waste management.
Solid Waste Management Strategy of Sri Jayawardenapura Kotte

Part II
The Strategy

The Guiding Principles

The Sri Jayawardenapura-Kotte Solid Waste Management Strategy is anchored on the premise that:

Solid Waste Management covers all activities pertaining to the control, transfer, transport, processing and disposal of residual solid waste in accordance with best principles and practices of public health, economics, engineering, conservation and aesthetics. Its scope must include attendant administrative, financial, legal, planning and engineering functions.

The Strategy is guided by several key principles. They are:

The issue is much wider than SWM: The strategy acknowledges that solid waste management is no more a limited public health engineering responsibility. It is a much wider task and, therefore, must be seen in the context of comprehensive planning and management of the total city environment.

Don’t waste Waste: Waste is money. The UN-Habitat sponsored Sustainable Cities Programme (SCP) has succeeded in getting the local authority and the resident community of the city to understand that it does not make economic sense to waste the “useable waste”. The residents now feel the need for effective community and household-based methods for urban solid waste management. They are no more ignorant of or averse to these methods which call for greater household care and action. This is one of the main accomplishments of the SCP programme. A considerable number of city residents are now ready to support municipal SWM efforts to adopt a 4R principle (Reduce, Reuse, Recycle and Reject) and are seeking municipal guidance and follow-up.

Lack of financial resources is not the main issue: As in all other local authorities in Sri Lanka, SJKMC too spends a considerable percentage of its annual budget of solid waste management. The amount spent daily is substantial. The reason for inadequate management is more a problem of strategy and administration than a lack of finances.
Landfill is only the last resort: Currently, the city’s solid waste management depends solely on collection and disposal method. There is increasing difficulty in finding suitable landfill sites. Obviously, indiscriminate burying of recyclable material is a colossal waste of marketable resources. The strategy, therefore, treats waste as raw material and an income source for the city. It will use the landfill technique only as the last resort and, in its place, will promote alternative techniques to reduce, reuse and recycle the optimum possible quantum of waste at the point of generation. The strategy also proposes to use alternate methods to transform the landfill sites into Eco-parks for public use.

Recognize the Informal sector as a vital partner: The urban informal sector is a critical part of the whole waste management system of the city. For the first time here, a municipal strategy is recognizing the presence of the informal sector in SWM and proposing municipal assistance and facilitation of its operations.

People need affordable solutions: The society seeks after easy solutions convenient and affordable to the individual and family. Changing their attitude and habits is a formidable task. It can be done only by introducing innovative solutions that do not call them to go out of their way and routine. Home level composting appears to be an effective primary mode to meet this challenge. Home-based composting alone can prevent at least 60% of the household waste from being a municipal problem and an environmental hazard.

Peoples’ participation: Social Mobilization for environmental care is an important element of this strategy. It recognizes public education as an important corollary in the context of current socio-economic pressures and complexities. It also envisages creating institutional methods to engage the city residents in municipal planning and decision making. The strategy will mobilize School Environment Societies as partners in this regard. The strong public opposition against landfill sites in urban areas and garbage transportation through their localities must be positively addressed to convert such protest into social movement for home-level waste reduction, reuse and composting.

Develop stakeholder partnerships: SJKMC is convinced that urban waste management will be easier and more effective only if the local authority can develop institutional mechanisms to promote sustainable partnerships with different stakeholders of the city such as the residents, civil society organizations and the private sector.

Administrative and institutional changes are vital: Several far-reaching administrative and institutional arrangements are suggested to implement the new strategy. In designing these arrangements, due caution and care have been taken in this document to keep revisions to the minimum in order not to upset the existing administrative arrangements too much. The proposed arrangements emphasize (a) the use of alternative technological options to reduce, reuse and recycle domestic waste, (b) the use of community structures to ensure local area management that can create waste-free environments, (c) institutionalization of the working group system at city and ward levels.
to plan and review environment planning and implementation, (d) the creation of a Rapid Taskforce on Environment for policing the city to nab the violators of environmental laws of the city and also (e) annual submission of an Environmental Status Report for Council’s debate, adoption and necessary action.

**Free services are less sustainable:** Local authorities can no more provide waste collection services free of charge. In addition to being financially unsustainable, free services permit careless and unrestrained anti-social behaviour which is also a moral hazard. Moreover, free waste collection and disposal is also a discriminatory practice because the bulk producers of waste are treated in the same manner as those who generate less. The proposed strategy is based on the premise that generators of waste must share the costs of waste management according to the volume they generate.

**Documentation is important:** The municipal record-keeping methods are weak. They do not provide vital information required by the administrators and planners to understand the ward-specific, lane-specific quality and quantity of generated waste. It does not even provide leading information to plan the cadre and vehicle deployment effectively. Hardly any records exist that can indicate the types and volumes of different waste to help planners determine the different recycling modes and processes that can be used.

**The Six Strategic Elements**

The proposed strategy is not a monolithic collection & disposal system. Instead, it proposes to employ a multi-pronged approach that revolves around the ‘4R’ participatory principle of Reduce, Reuse, and Recycle & Reject. The strategy employs six main elements. They are:

1. Engaging an affordable mix of appropriate technical options to Reduce, Reuse, Recycle & Reject.
2. Involving all major stakeholders in the implementation
3. Promoting Private-Municipal Partnerships
4. Strengthening institutional SWM capacity of SJKMC
5. Influencing national and provincial level policies & program support
6. Enforcing laws and policy

The six approaches are elucidated below.

**1. Engaging an affordable mix of appropriate technical options to Reduce, Reuse, Recycle & Reject.**

The best method to deal with waste is centered on a broadly accepted “Hierachy of waste management” which gives a priority listing of the technical and sociological options of waste management available to the city authorities. The hierarchy gives general guidelines on relative desirability of the different management options.
The highest and most preferred rank of this integrated management hierarchy is waste prevention or waste minimisation at source, which aims at reducing the amount of the waste produced. It is the most effective way to reduce the quantity of disposable waste, the cost associated with its handling and its adverse environmental impacts.

Reuse, recycling and energy recovery technologies then come as moderately suitable technologies. Landfilling is the last option of the hierarchy that involves controlled interment of the residual waste which has no further use on or in the earth’s mantle. This is the most common practice in many countries.

**Strategic Interventions**

The Municipal Council will emphasize the use of an affordable mix of appropriate technical and sociological options and thus will cease to depend solely on the conventional collection and disposal method. The proposed mix of options is:

- Public education to enhance environmental awareness.
- Creation of an environment friendly, eco-sensitive city
- Promotion of waste reduction at the source of generation
- Separation of waste at source of generation
- Return of Recyclable material to the market.
- Composting & home-gardening
- Research in to anaerobic digestion
- Scientific handling of clinical and hazardous waste
- Door to door collection of household waste
- Set up ‘polluter pays’ system for special waste like demolition waste, hazardous waste etc.
- Sanitary landfill as the last resort.

*Public education to enhance environmental awareness*
• The Council, in collaboration with the Department of Education, the Central Environment Authority, other related agencies and NGOs, will conduct city wide public education activities periodically to raise the environmental awareness levels of the public and the city residents in order to obtain their cooperation to implement the Solid Waste Management Strategy and make the city environment-friendly and eco-sensitive and to implement the.

• In collaboration with the private and NGO sectors, the Council will organize annual competitions and rewards to recognize eco-friendly residents and institutions. Entities that use recyclable material for beautification of their premises, localities and public locations of the city beautification of their localities with creative designs to use waste material such as ceramics, wood, metal, glass and plastics will be recognized through a well-planned media blitz annually.

**Creation of an environment friendly, eco-sensitive city**

• The Council will identify and demarcate eco-sensitive zones in consultation with the Port Commission, SLLRDB and UDA. The proposed Rapid Taskforce on Environment (RTE) described below will be set up and charged with the task of protecting and monitoring these zones.

• The RTE will take measures to monitor street littering and encourage compliance with the Municipal Zero Waste Plan.

• Solid Waste Management must be seen as a comprehensive allied task of road maintenance too. Road sweeping, collecting, wedding, brushing and washing must be seen as an integral to solid waste management though road cleaning is generally perceived as two separate work realms and responsibilities by many.

• Depending on the available resources, all public roads and lanes will be swept regularly, preferably daily, under the supervision of the Municipal Council. In consultation with the cleaning cadres, the Council will explore possibilities of fixing staggered shift times that will help release the workers during daytime except for 3 hours. The incentive here is that the cadres will be free most of the time during the normal working hours. They may work in the early hours of the morning and again in the early afternoons to keep the city streets clean for the morning and evening traffic peaks.

• Informal sweeper groups or community groups will be encouraged to link with the road sweeping and weeding services of the municipality. The Municipality will explore the possibility of setting up community-based composting yards on suitable road-side locations and of handing over to interested sweeper groups or CBOs to maintain them and use the proceeds from the sale of manure produced by them.
• Locking up and regular auctioning of stray cattle and other animals will be strictly followed and implemented as a deterrent to socially irresponsible residents who permit the cattle to graze in open areas.

• Large and unsightly garbage bins will be withdrawn from streets and public places as an integral part of the Zero Waste approach. Instead, door-to-door collection methods will be streamlined and strengthened to reduce the need for roadside dumping. Removal of bins will help keep the roadsides clean and un-littered. It will also help reduce the menace of cattle and other animals feeding on garbage dumps which are currently a big problem in the city.

• While withdrawing garbage bins, the Council will revive the practice of providing litter-bins for pedestrians and commuters on busy roads and lanes. An average of one litter bin for every 100 meters of road length will be adopted as the planning norm. In crowded areas such as market place, railway stations and bus stands, the frequency will be increased to 50 meters the minimum.

• Roadside tree planting will be an important element of the solid waste management approach of the Municipal Council. Aprons will be created around each such tree to act as a receptacle for dry leaves collected from the surrounding area. The current practice of collecting and sending such compostible material away to landfill sites will be stopped and such material will be used on-site to nurture plants and trees.

Promotion of waste reduction at the source of generation

• Awareness-creation and education programme will be organized in public places and schools to educate and mobilize the citizens to apply the basic principles of 4Rs and minimize waste and particularly to discourage the excessive use of polythene and plastic products.

• Guidelines will be issued to supermarkets, shops and institutions to reduce waste generation through reuse/recycling of packaging materials. The guidelines will encourage the practice of price rebates for returning the empty bottles/containers such as aerated water, jams, fruit cordials etc.,

• Where possible, the users will be encouraged to re-use polythene and paper. The use of material and products such as plastic and paper plates, cups and serviettes will be discouraged through public campaigns. Instead, the use of conventional and more permanent material like ceramics crockery and cloth napkins will be promoted. The restaurants, hotels and institutions will be encouraged to use re-usable material to the best possible extent. Environment education programmes will be used for the purpose.

• Grinding and reusing construction rubble will be an important aspect of the new strategy. Currently, huge volumes of this waste go to the landfill thereby not only ‘wasting’ the valuable waste but also reducing the life-time of the landfill site.
Separation of waste at the source of generation

- Segregation of waste at the point of origin i.e., house, office, school or institution, will be a non-negotiable and critical element of the strategy. As a deterrent, a special levy will be collected from households that dump mixed or wet waste. SJKMC will direct the households, shops and institutions not to mix recyclable waste with biodegradable waste and will encourage them to keep the bio degradable and non-biodegradable, recyclable and non-recyclable waste in separate containers or bags for collection by the informal sector recyclers or by the council-approved SWM staff.

- The current practice of collecting both dry and wet waste together in the same vehicle will stop... Wet trucks and dry trucks will be sent separately. That will ensure corrosion-free, longer life time for dry waste carriers. Directions will be given to the households to compost the kitchen waste and to separate the non-compostibles for municipal collection or direct sale.

- Barring exceptional areas, the collection of wet waste will be discontinued on a well-announced cut-off date.

- Regular education and public awareness sessions will be organized in each locality with the help of residents’ associations and other NGOs. Though such sessions, ‘No separation-No collection’ policy must be communicated and adopted using participatory techniques.

Return of Recyclable material to the market.

- The Municipal Council will recognize the services provided by the private informal sector. This is the sector that organizes the recycling of city waste. Therefore, as an integral part of the SWM strategy, the Council will facilitate its operations through (a) registration of these service providers, (b) regular consultation with them, (c) collaborating with NGOs to recognize rag-picker associations and (d) issuing and identity card system to provide recognition and legal protection to the group.

- The Council will encourage recycling as a livelihood and facilitate area-based waste recycling enterprises and coordinate different recyclers and help improve their capacity. It will also and recognize and network the CBO’s and other resident level waste recycling and purchasing agents and also encourage the entry of community-based organizations such as Multi Purpose Cooperative Societies into the waste recycling sector.

- SJKMC will allocate resources, particularly in the coming five years for Research & Development purposes and set up sites for experimentation of alternative technologies to recycle different types of waste.
The council will make suitable arrangements to increase the number of waste collection centres on the lines of the currently operational experimental centre. It will consider handing over the management of such centres to the private sector on profit sharing basis.

**Composting & home-gardening**

- Composting of bio-degradables will be promoted. Bio-degradable matter from residences and small scale generators will be composted at the point of origin using composting bins, vermin-culture and other appropriate and low-cost technologies that can generate energy or manure. Home composting will be encouraged promoting methods such as hire-purchase schemes for purchase of compost bins.

- Biodegradable waste from large scale generators (some hotels, restaurants, hospitals, markets etc.) and residences where home composting is not practical will be composted in decentralized composting plants with simple technologies like windrowing, static files etc. for which a reasonable fee will be levied.

- Mapping will be done to identify the suitable areas and lands for composting and other waste management technologies. Collection routes will be planned for efficient collection and effective use of KMC vehicles.

- Providing subsidies across the board for compost bins is not a sustainable strategy. SJKMC will adopt a selective methodology for subsidies to cover only the poorest groups that cannot afford to buy the bin. Scheme such as Micro-credit or Pay-by-installments will be introduced through CBOs and Lane Development Committees for the purchase of compost bins.

- Urgent steps will be taken to universalize the use of compost bins. Until every house uses a bin, the municipal trucks need to be sent daily to the area defeating the very purpose of the initiative. The purpose is to reduce the volume of garbage dumped out for collection.

- All households will be encouraged to purchase and use compost bins available in the market. As part of the strategy, the municipal council will provide market information; negotiate with the suppliers and arrange for higher purchase systems; and also develop appropriate subsidies for the poorer sections of the city to obtain the bins.

- Municipal Council will allocate resources on setting up medium size Eco-centres that does vermiculture and composting. It will obtain the assistance of the Department of Agriculture to formulate standards on the nutrient quality of home-based compost and introduce a purchase and marketing system to promote composting. SLS Standards will be a guiding factor.
• In collaboration with the Department of agriculture, The Council will also help set up an Eco-cooperative of rag-pickers to market compost and other waste-borne products.

• The formation of Eco-cooperatives of rag-pickers and other unemployed youth will be encouraged and supported by the Municipal Council buy excess compost from the households and suitably package and market it.

• Though the CBOs, the Council will encourage the residents with adequate land space to do home gardening. Composting organic waste could then become and important input as growing media or soil conditioner.

**Research in to anaerobic digestion**

• Small scale anaerobic digestion will be promoted as a means of waste management at school premises, child care institutions and elders homes etc.

• Mechanisms will be created to collect source-separated organic waste from markets, hotels, restaurants and send it through a biomethanation process to produce methane-rich biogas energy.

• The Municipal Council will explore possibilities of introducing bio-gas that permit daily intake of market waste in large quantities. Designs that can produce saleable liquid gas in marketable cylinders will be explored keeping in view the costs and technical viability.

• It will also encourage private sector collaborations to establish a chain of bio-gas and composting centres to turn waste into usable products and thus into money.

• The Council will explore possibilities of introducing small-scale domestic bio-gas units that can treat kitchen waste and toilet waste simultaneously.

**Scientific handling of clinical, chemical and hazardous waste**

• The producers of bio-medical (explained in Annex 1) and other hazardous waste that can threaten public health will be made primarily responsible for disposing such waste under the supervision and care of the municipal authorities. For this, special guidelines will be issued by the Council following the norms issued for the same by the Ministry of Health and the Ministry of Environment. Central Government. Bio-medical and pathological waste including body parts of humans will be disposed of through methods that conform to safety standards stipulated by the government and will be incinerated under Council supervision.

• The Council will insist on placing special containers at sorting stations, recyclables collecting centers or other public places for the deposit of hazardous waste
• The Council will take suitable steps to encourage the households to store their household hazardous waste (batteries, aerosol cans, razor blades and tube lights) separately for discharge on publicized days in different areas of the city.

• The new SWM strategy will have provision for conducting regular microbiological tests on leachate systems used in the city.

• The current practice of indiscriminate and un-supervised burying and burning of waste in the city can cause health hazards and threaten the ground water quality. Therefore, the local authority will establish an authorization procedure for waste processing and disposal facilities.

*Door-to-door collection of household waste*

• As previously explained the city will gradually move out from collecting waste from community-level and road-side bins to individual household collection system while encouraging segregation and recycling which will bring monetary incentives to the family. Use of compost bins or compost beds will be promoted as part of the recycling effort.

• Organizing door-to-door collection of waste shall be an irreversible strategic approach. This is the only way to prevent residents from dumping their garbage out. With the popularization of home-based composting, it is assumed that the frequency of waste collection will reduce considerably.

• The Municipal Council will consider adopting a phased-out, two-year plan to introduce ‘no segregation - no collection’ policy, ably backed by an efficient system of daily collection.

• The households that can afford the costs will be encouraged to purchase and use a durable bin to keep their non-biodegradable waste secured under a lid until it is collected.

• Under the door-to-door policy, the Municipal Council will plan and synchronize the meeting of primary (carts, bicycle trailers & tricycles) and secondary vehicles (trucks and compactors) at appointed times and place.

• The costly system of sending the compactors to all lanes and avenues will be replaced by a decentralized, community-managed primary collection system preferably managed by CBOs such as residents’ associations and welfare societies that will be financially assisted and equipped for the purpose by the municipal Council.

Being uneconomical, the use of sophisticated compactors to collect waste from lanes and by-roads will be avoided. Instead, only primary vehicles will be used to collect and transport waste from those places to the main roads synchronizing the timing of these vehicles with the arrival of compactors. The arrivals will be planned efficiently
to ensure that lane-waste is emptied directly into the compactors and trucks at agreed times. An incentive payment may be considered to ensure that synchronized timing would work.

- The costly system of sending the compactors to all lanes and avenues will be replaced by a decentralized, community-managed primary collection system preferably managed by CBOs such as residents’ associations and welfare societies that will be financially assisted and equipped for the purpose by the municipal Council.

- The Municipal Council recognizes that the urban informal sector too plays an important role in the city’s SWM. It could provide uniforms and implements to help collect and transport the waste from lanes and byroads and hand it over to the collection vehicles. Such a mechanism will help create a healthy mix of collection strategies and improved relations with the households because the same picker will then be visiting the house regularly. It will also help reduce transport and other operational costs to the company and MC. With this arrangement, the chances of the main roads getting littered will be low.

- These informal workers will not be considered employees of the local authority but will be regarded as important associates of the solid waste management system in the city and will be provided with carts/tricycles, other basic implements, uniforms, identity cards and health insurance to the extent that municipal resources would permit.

- The Council will also explore the possibilities of identifying and enclosing small parcels of land, away from conspicuous locations, in each locality to help the rag-picking partners to bring and segregate the waste further before sending the balance non-degradable and non-recyclable material to the landfill site.

**Sanitary landfill, as the last resort**

- Landfill sites will be used sparingly and only as a last resort. It will help increase the longevity of the sites in the context of dwindling land supply. Maximum effort will be made to reduce organic material and recyclables being land filled.

- Suitable landfill site will be located with the help of Western Province Solid Waste Management Authority (WPSWMA), probably on shared basis with other local authorities in the zone. Better emissions control systems and post-fill monitoring mechanism will be introduced to minimize possible contaminations.

- Future landfill sites will be designed as Eco-parks. The informal sector workers on the site will be encouraged and rewarded to develop the park in their free time according to a type plan and supervision provided by the Council. Using their services, possibilities can be explored to set up attractive children’s parks on the lines of the Nek Chand Rock Garden in Chandigarh, India which has been built solely with material that came to the dumpsite for land-filling.
The land-fill sites will also have large composting yards. The weigh bridge at the refill site will direct the wet trucks to the compost yards. The bio-degradable items will be composted and only the non-degradable balance will go for landfill. For this to happen, the responsibility of managing the land fill site must rest with a separate department.

Landfill will be lined with fence and will follow standard land-fill management and monitoring procedures related to daily covers, leachate treatment and gas treatment facilities etc.). Adequate steps will also be taken to prevent indiscriminate scavenging on the site.

Waste will be fully covered during the entire period of transport between the point of origin and the final landfill.

2. Engaging the major stakeholders in the implementation

Stakeholder participation is the fulcrum of the new strategy. The strategy is built on the premise that solid waste management is not a mere public health engineering exercise. It requires the participation of every single resident and user of city facilities. SJKMC will use the following approaches to mobilize their cooperation and support.

- Creation of Institutional mechanisms such as working groups and regular city consultations to involve the residents individually and collectively.
- Conduct of community-based civic education programmes.
- Setting up Ward level Environment Management Committees (EMC) in each ward under the leadership of the clergy.
- Setting up of Lane Committees for environment
- Revitalizing School Environment Committees to get involved in social mobilization.
- Publication of waste collection schedules
- Promotion of urban horticulture.
- Recognition and facilitation of the private informal sector.
- Engagement and facilitation of NGOs and CBOs.

**Creation of Institutional mechanisms:** As detailed elsewhere in this document, the Municipal Council will create the necessary institutional mechanisms to hold regular City Consultations and Working Groups at appropriate levels to enlist regular involvement of main city stakeholders in the implementation of this strategy. For details, please see the sections below on institutional arrangements and working groups.

**Conduct of community-based civic education programmes:** SJKMC will organize regular city wide mass communication campaigns to educate the residents, the
occupiers of commercial establishments and public institutions on the new SWM strategy, rules and guidelines with the view to enlisting their active support and participation in its implementation. Door-to-door education by official teams is the most effective way of public education, conscientization and awareness-raising as proven by the Green Star Homes project of the Colombo Municipal Council. The School Environment Societies will be a strong partner in this effort.

- **Ward-level Environment Management Committees (EMC) led by the clergy:** The Council will help set up an Environment Management Committees (EMC) in each municipal ward to engage public participation and collaboration in SWM in the ward. Ideally, this committee will be attached to a religious institution in the ward and will function under the leadership of its chief incumbent priest. It will meet monthly to discuss and review the status of SWM in the ward and represent matters to the Municipal Council when municipal action is desired. In addition, the committee will mobilize public participation in environment improvement actions. It will also directly supervise and monitor the lane committees described below.

- **Lane Committees for environment:** The Municipal Council will identify and encourage a Residents’ Association, Lane Committee or any other existing Community Based Organization (CBO) in each locality to take responsibility for participatory local area management. Where such organizations do not exist, the Council will help form new ones. These associations will be authorized to do site-checks to monitor the environmental cleanliness in the area and directly report to the mayor/commissioner if there are complaints. The local authority will encourage and assist these Lane Committee to develop its own locally sustained systems to collect waste from their lanes and bring those to designated points on the main roads for collection by the motorized vehicles.

  For primary collection, the local authority will provide tricycles, basic implements, uniforms, health insurance. As an incentive, it will also provide for a maximum of one year the salary of two waste collectors for each cluster of 300 households thus served. It will also provide an easily accessible plot of land for the workers to bring the mixed waste for segregation and sorting. It is from this spot, the vehicle would collect the unusable waste. Gradually, the CBO will be able to pay the workers from a monthly fee charged from each household and from the sale of recyclables. The participating CBOs will be responsible for maintenance of the tricycle and implements, daily assignment and monitoring of workers, supervision of the segregation process and recording of sales, attending to resident complaints and pay penalties levied by the local authority in case of default. The Samurdhi poverty reduction scheme of the government can be easily linked to this effort to obtain the initial capital required for eventual replacement of worn-out tricycles, uniforms and implements. Its strong field presence will also be a boon to monitoring.

- **Revitalization of School Environment Committees:** The Environment Societies of the city schools will be activated as part of the city SWM strategy to promote a litter-free school environment; segregation of waste both at school and home; and to take
the message of making Sri Jayawardenapura - Kotte an environment friendly, eco-sensitive, zero waste city to their neighbourhoods and communities.

‘Catch’em Young’ will be a vital element of the new strategy. Primary and secondary level students must be mobilized through School Environment Societies to perform public awareness raising functions. The local authority, in collaboration with the Central Environment Authority and the Ministries of Environment and of Education will train and assist these societies to play a more proactive role in environment promotion work than what they are presently engaged in.

- **Publication of waste collection schedules:** The municipal council will notify the waste collection schedule & times on a regular basis in each ward and educate the residents on the same through the lane committees, the collectors and field functionaries to discourage dumping of waste in public places.

- **Promotion of urban horticulture:** In the new strategy, SJKMC will place emphasis on promoting horticulture and home gardening at the household level. Special sales and exhibitions will be encouraged and facilitated to be a regular feature in the city life to propagate urban agriculture and horticulture that will add beauty to the city and create the demand for compost manure.

- **Recognition and facilitation of the private informal sector:** As explained earlier in the document, the municipal council will recognize and work closely with informal service providers such as rag-pickers, their associations and the merchandisers of recyclable waste who had been silent partner in city SWM for many long years.

- **Engagement and facilitation of NGOs and CBOs:** The CBOs & NGOs working within the city will be formed into a consultative group to meet regularly and advise & assist the municipal councils in the implementation of the strategy.

### 3. Promoting Private-Municipal Partnerships

The proposed strategy strongly hinges itself on partnerships between the municipal council and the private sector. Privatization of environmental services will be done with cautious optimism ensuring the highest levels of transparency and promoting appropriately designed linkages with the informal service sector so as to prevent marginalization of the poor who currently depend on urban solid waste for their livelihood.

- **Continued engagement of the private sector:** The municipal council will continue to mobilize private sector partnerships for maintaining city hygiene and sanitation. As a strategic option, SJKMC will engage more than one such partner to promote healthy competition and self-assessment.
• **Street beautification:** The contractors will be entrusted with the task of beautification of the major roads and streets with trees and floral beds. The contracts signed for outsourcing SWM responsibility of the local authority will be comprehensive to cover not only transporting and sanitary land-fill engineering tasks but also the allied composting services. In view of the dwindling landfill spaces, the contractor must agree to separate the waste on arrival at the landfill and compost the digestible at a separate place in the site.

• **PPP Forum:** The Municipal Council will encourage the private sector to set up a Public-Private Partnership Forum in the city with the view to enlisting private sector partnerships to supplement the environment planning and management efforts of the city.

• **Assistance to recycling industries:** Local authority will, within its mandate and resources, provide all possible assistance and incentives for industries that recycle waste such as plastics, paper and aluminum to expand their production capacity and also to ensure proper and adequate treatment and reuse of their waste including waste water.

• **Environmental approval for construction plans:** New plans for construction of business, commercial and manufacturing premises as well as large public institutions will be rigorously examined to ensure that they have adequate provisions for treatment and reuse of their waste, both solid and liquid.

• **Fines for minor breaches of contract:** SWM Contract agreements will ensure that there are reasonable fines imposed if the contractor does not, for example, clean the area before a particular time of the day; the agreed number of vehicles are not used; ‘On Municipal Duty’ board is not displayed on their vehicles; bring heavy material such as rocks and boulders to the weighing scale of the landfill site; not use covered vehicles for transport of waste; and, bills not submitted on agreed time.

• **PPPs to promote 4R:** The payment of private contractors will be reviewed as a forward looking arrangement. The current mode of payment is an incentive to produce more garbage. The more one collects, the more he gets. As the contractor is paid per each ton he brings to the site, he can neither be used nor is he motivated to be a partner in encouraging the households to reduce, reuse and segregate their waste. Therefore, through a consultative process with private partners, a more developmental payment mode will be introduced based on the satisfaction level of residents. The future contracts will make promotion of 4Rs an incumbent responsibility of the private partners.

• **Incentives based on quarterly assessments:** The council will conduct quarterly Rapid Assessments to ascertain the satisfaction levels in different wards and will link their results to an incentive component (Resident Education and Satisfaction Allowance) of the payment. This part of the payment will be so designed to encourage the contractor
to interact more regularly with the households and encourage them to reduce, reuse and segregate waste.

• **Private sector as a thinking pad:** The privatization process will be geared to generate innovative new thinking and action on EPM/SWM. A more productive and proactive partnership will be fostered with the sector where the private sector not only be a service provider but also act as a thinking pad for the local authority. It will be expected to conduct regular roundtable discussions on measures to improve EPM/SWM in the city and submit their analyses, reports and recommendations for Council’s consideration.

4. **National and Provincial level Policy & Programme Support**

• The Central Government will be helped with views, comments and suggestions to regularly update the existing guidelines and, where necessary, to issue complementary rules for urban solid waste management directing the urban local authorities to ensure optimum technical and administrative standards. The SWM Rules 2000 of the Government of India is a good model to study before undertaking the exercise.

• Researching for new technologies is beyond the capacity of any single local body. Therefore, the Government of Sri Lanka or the Western Provincial Council must set up a Research and Development unit to search for new and updated technologies for recycling and sanitary land-filling working in association with the Sri Lanka Standards Institution and the Sri Lanka Institute of Technology. A time-bound research agenda must be developed to provide technical advisory services and research support to the local bodies.

• In Sri Lanka, palletizing of plastics, smelting of iron and pulping of paper are the most prevalent recycling techniques. Waste is energy too. R&D efforts must be intensified to retrieve energy from waste. For example, a subterranean network of punctured pipelines in sanitary landfill areas might help extract cylinderable gaseous substances for cooking and lighting purposes.

• The Provincial Council and Central government must support and ensure the continuity of process-oriented initiatives such as Sustainable Cities Programme & the Basic Urban Services Programme an integral part of its solid waste management programme strategy.

5. **Strict enforcement of Laws & Policy**

• This Strategy aims at helping the SJKMC implement the National Strategy for Solid Waste Management in a manner that suits the local conditions. It derives power from
the said National Strategy, the National Environment Act and the Municipal Councils Ordinance.

- The Working Group will set up a special study group to assess the existing legal and administrative provisions that govern solid waste management in the city and to propose appropriate revisions to make the frameworks more resident-friendly, efficient, speedy and pro-poor. The new legal code will acknowledge that SWM is a shared responsibility among the residents, the formal and informal sectors and the municipal council, where (a) the residents, occupants and their community organizations will be responsible for separation of waste at the household level, composting the wet waste, socially responsible disposal of the residual waste and also the monitoring of municipal cleansing of their streets and lanes and (c) the municipal council will be responsible for collection and final disposal of the residual waste, promotion and facilitation of optimal reuse and recycling, productive engagement of the private sector, both formal and informal, as SWM partners and to enforce the laws strictly to prevent violations.

- The Working group will help the related Standing Committee review the available Environmental bye-laws, starting with SWM, and implement it with immediate effect giving wide publicity followed by community level public education.

- Under the Zero Waste Plan, the city will not permit throwing waste on public places including streets, lanes and drains. An effective punitive action process will be enforced as a deterrent, preceded by a time-bound phase of public education, domestic sensitization and social mobilization. Where garbage and litter bins are an absolute necessity for social and other reasons, the Municipal Council will ensure that such interim storage depots will have proper covers and the ground is kept litter-free through regular cleaning.

- The Municipal Council will strictly enforce the environment laws to ensure effective management of solid waste in the city. Non-compliance of these rules must be brought under the Acts on Public Nuisance and of Environmental Pollution and be strictly dealt with. Among other things, the new rules must include the following:
  
  - Banning traditional spraying of sand during funeral processions because the sand so used get mixed with solid waste increasing the transportable volume and also gets and blocks the storm water drainage systems.
  - Immediate ban on emptying of non-treated effluent from leachates, cesspits and toilets to city waterways.
  - Real estate developers must be enjoined by license to transport demolition debris daily at their own cost to designated plots where recycling facilities are available. Municipal trucks should not be provided for such transport.
  - Making owners of all premises and buildings responsible for separation of solid and dry waste in different bags or containers before handing them over to municipal collector. Municipal Council should be empowered with discretionary powers not to accept non-separated waste.
• Municipal Council to make adequate arrangements for utilization of degradable waste for composting and bio-energy retrieval.

6. **Strengthening EPM/SWM Institutional Capacity of SJKMC**

Institutional capacity of the municipal council will be improved by streamlining SWM as part of the Council’s overall approach to environment planning and management. Institutionally, SWM will not be perceived as an isolated entity. It will be brought into the mainstream of municipal planning and administration. Necessary institutional changes will be made to achieve this shift of emphasis and positioning. Participatory institutional mechanisms will be introduced to engage partnerships and public participation and to search for innovative technical solutions to SWM problems. Human resource development too will receive due attention and resources. The staff will receive due orientation to the new approach of waste reduction and recycling as against collection and disposal.

• **Comprehensive environmental approach:** Solid waste management cannot be done in isolation. It must be viewed by the Municipal Council and the city stakeholders as a part of a broader concern for urban environment management. Institutional arrangements must, therefore, be designed to manage the total environment and not only the solid waste problem. Accordingly, the strategy proposes a new organogram for institutional restructuring within the municipal framework as given in the diagram below.

• **Non-negotiable Emphasis on Waste Reduction:** For sustainable solid waste management, optimum possible cost recovery through separation and recycling of waste is very important. Recycling is not only a cost recovery method but also waste reduction approach. It will help reduce the existing demand on municipal management and financial resources and also the land area required sanitary filling.

• **Restructuring of institutional arrangements:** The conventional municipal SWM is represented by a hierarchical structure headed by the Municipal Engineer. This SWM organogram is no more valid in SJKMC where the city waste is handled now by many formal as well as informal partners i.e. the private sector, householders, domestic sweepers, rag-pickers at dumpsites and as itinerants, waste hawkers and recyclers. The primary collection and disposal is done by the urban poor and allied marginalized social groups. They all are important allies in the management of city waste. The proposed EPM/SWM Organogram of SJKMC reflects this reality recognizing and promoting the various efforts all of them as virtual partners. The new organogram proposed a three tier management structure at city, ward and community levels directed by a city level Environment Task Force. Two programme units, one for SWM and the other for Environment will be set up at the administrative level. They will be assigned with the responsibility of responsibility of planning and
managing the two specific areas of concern. The SWM unit will be led by municipal engineer and the environment unit will be led by the Medical Officer of Health.

**Optimum decentralization of municipal operations:** Municipal Council will restructure the present SWM system to decentralize the operations and management into ward and lane committees. A wholly new image building exercise is necessary to improve the public image of the staff engaged in solid waste collection and disposal. It is desirable even to change their designations from the old hackneyed ones to terms like Eco-Workers, Eco-Assistants and Eco-Managers. A subsidiary Environment Management Committee will be set up for each ward. The Council will take immediate steps to restructure the existing waste collection, disposal and processing facilities and network them into a single system with private sector, informal sector and the community as active partners.

**Capacity-building for Decentralized EPM/SWM:** SJKMC will take measures for institutional strengthening through induction of professionals, human resource development planning and further decentralization of SWM administration and delegation of powers to the private sector and local communities through their CBOs. The proposed organogram is a step in that direction.

**Staff mobilization, training and education:** The staff assigned to the two units on SWM and Environment will be given due orientation to the new strategy and will be constantly exposed to new information on the subject. Training and exposure of staff will receive special attention. A handbook will be compiled and distributed among all staff members and partners in SWM detailing the guidelines and rules on (a) collection, (b) segregation, (c) mid-way storage, (d) transportation, (e) processing and disposal of solid waste.

**Strengthening the Municipal Standing Committee:** The local authority will consider bringing in necessary changes to its statutory committee system to co-opt subject specialists and stakeholders to some of standing committees such as the one on Health and Sanitation (Environment) to enlarge its scope and coverage as a permanent Working Group within the municipal system to oversee and improve SWM in the city.

**Publication of an Annual Report on Status of City Environment:** The Municipal Commissioner and the Working Group proposed here will be enjoined by a resolution of the Council to submit an Environmental Status Report annually to the Council with special reference to actions taken during the year to improve SWM quality and coverage. The Report must be shared with the Central Environment Authority, the Commissioner of Local Government, and subject to a special debate in the Council. The debate must focus on the actions taken or not taken to implement the Solid Waste Management Rules of the Government and the city SWM strategy. The related agencies will be encouraged to provide their comments and suggestions on the report to help the Council decide on corrective and remedial actions necessary.
• **Strategy Implementation Plan:** The Working Group will also be expected to submit for Council approval an Implementation Plan to operationalize the proposed SWM strategy.

• **Improved public relations:** A key to successful and sustainable implementation of the strategies proposed will be the quality of municipal-public interaction and cooperation. This can be cultivated only through regular follow up visits by the municipal staff. Such follow up is a sine qua non for the success of implementation. The proposed Environmental Environment Committee at the ward level must undertake and monitor this task.

• **Regular process-documentation:** The local authority will consider documentation of process and progress as an integral part of the administration and decision making process. Necessary mechanisms will be put in place to obtain regular reports and datasheets on SWM issues.

• **Computerized Complaints Redress System:** It will also set up an independent computerized system for data collection and to process and coordinate the complaints from residents.

• **Creation of an EPM/SWM Vigilance Squad:** In collaborate with the city police and the Central Environment Authority, the Municipal Council will set up an environment vigilance squad called Rapid Taskforce on Environment (RTE) with authority to monitor eco-zone and levy on-the-spot fines.

• **Management & Monitoring:** As given in the following Organogram, the monitoring of implementation of this strategy for Solid Waste Management in SJKMC will be done at three different levels and will be coordinated by a Municipal Working Group on City Environment.

  **At the City Level:** The Municipal Standing Committee on Environment will continually review the implementation progress assisted by the proposed Working Group on City Environment which will meet monthly. Its role is detailed below.

  **At the Ward Level:** The progress will be monitored and supervised by the Ward-level Environment Committee which will meet monthly or more regularly when needed.

  **At the Community Level:** The lane committees will be responsible for the management and supervision of waste collection and disposal. It will also promote and monitor household level compliance with the 4R principle. It will also keep the municipal functionaries informed of non-arrival or delay of compactor and heavy vehicles that will affect their service provision.

  **Working Group on City Environment**
As stated above, a high powered working group will be established which can put pressure on the higher levels of government to provide necessary support to the Zero Waste initiative of the capital city.

- Through an adopted council motion or a Provincial Council Directive, the Working Group will be set up making it mandatory to meet regularly, preferably monthly.

- Being the capital city, the Provincial Council’s Director (SWM) or Commissioner of Local Government will co-chair the Group along with the Municipal Commissioner.

- The Working Group will develop and implement a Zero Waste Management Plan and Strategy with immediate effect.

- As explained above under the section on institutional development, the Working group will submit an Environment Status Report (ESR) as a prerequisite for future Zero Waste Management and EPM action. Using a City Consultation process, the WG will establish a series of achievable SWM milestones for the city and plan and monitor its implementation.

The proposed organogram is given on the next page.
Environment Planning & Management in SJKMC Area

The Proposed Organogram

The Mayor & Council

Municipal Standing Committee

Working Group on City Environment
Called the SJKMC Environment Taskforce
Chairman: The Commissioner
Co-chair: Provincial Council’s Director (SWM)
Convener: The Municipal Engineer or Chief Medical Officer
Members: Chairman, Environment Standing Committee
         2 Co-opted Members of the Council
         Chief of Police
         A Director, CEA, Port Commission & SLLRDB
         Municipal Engineer
         Medical Officer of Health
         Assistance: Development Assistant, Environment Officer,
                     CDO, PHI, SWM Supervisor

SWM Unit
Head: Municipal Engineer

Environment Unit
Head: Medical Officer of Health

Ward Level Environment Committee
Chairman: Local Religious Leader
Members: Representative NGOs
         Leading clergy of ward
         Samurdhi & Grama Niladahris
         3 or 4 co-opted senior residents
         SJKMC Environment Officer

Lane & Street Committees
Managed by NGOs/CBOs