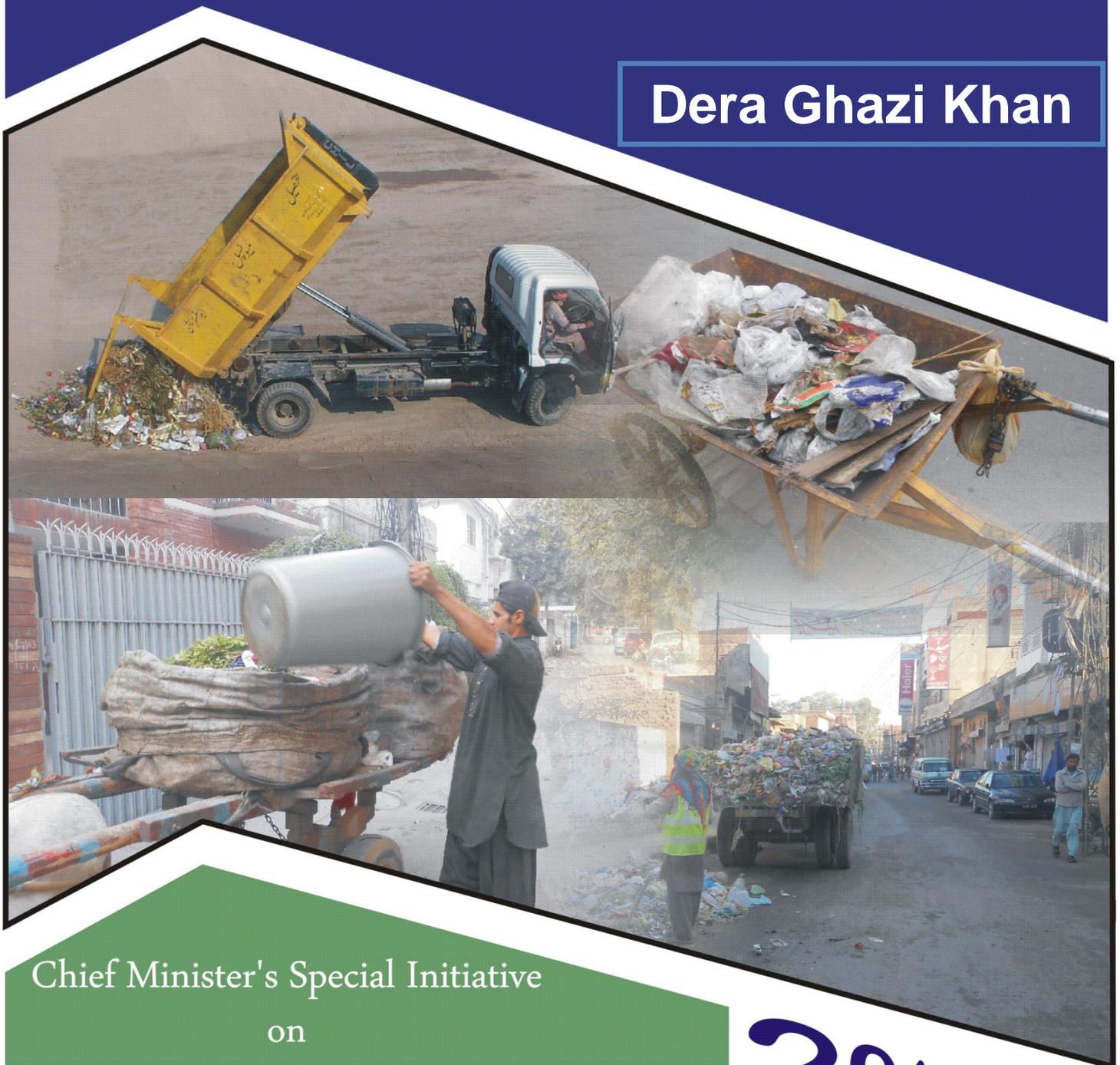




SITUATION ANALYSIS REPORT FOR INTEGRATED SOLID WASTE MANAGEMENT (ISWM)

Dera Ghazi Khan



Chief Minister's Special Initiative
on
Solid Waste Management for Urban Areas

2013

SITUATION ANALYSIS REPORT FOR INTEGRATED SOLID WASTE MANAGEMENT (ISWM) IN DERA GHAZI KHAN

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SOLID WASTE MANAGEMENT – INTRODUCTION

1.1 Objective

Punjab Chief Minister Mian Shahbaz Sharif is very conscious about the proper solid waste management system and is keen to see "litter free Punjab" in the forthcoming years. In this connection, the Government of Punjab is going to implement a solid waste management initiative in certain group of TMAs. The Purpose of this initiative is to develop effective solid waste management plans for TMAs which have adequate machinery to a certain extent. In the regard, it has been decided to gather the information regarding resource availability with TMAs for conducting detailed situation analysis in solid waste management sector.

1.2 Background

Solid Waste Management is a major environment and health hazard in the urban areas of Pakistan. Cities economies are fast growing, business activity and consumption patterns are driving up solid waste quantities. In Pakistan the collection of waste is sporadic and the disposal is poor. Despite the fact that solid waste services represent the single largest expenditure item, less than 50 percent of the waste generated is collected; and is mostly disposed at dumpsites or roadsides. Additionally, recent history has shown that lifestyle is changing at a brisk pace in the city. Due to changing lifestyles and consumption habits, SWM has been increasingly recognized as one of the major environmental issue in the city.

The rapid growth of many small to medium sized towns in Punjab is causing unprecedented deterioration in the ecosystem. It is also placing enormous pressure on the capacity of these towns to provide adequate Solid Waste Management (SWM) services for their increasing populations. Chief Minister's Special Initiative on Solid Waste Management is an initiative that seeks to address SWM challenges of these towns. The objectives of the exercise is to address SWM investments in these urban centers and build institutional and human resource capacities at local and regional levels for the sustainability of SWM services to reduce the environmental impact of urbanization. The initiative has a number of components including solid waste management (SWM) which seeks to minimize negative environmental and health impacts associated with poor solid waste management. The strategy is to provide 1) sustainable solid waste management system/interventions for each focal town, capable of collecting, transporting, treating and safely dispose what ultimately remains as waste 2) Capacity Building and Training component which seeks to ensure effective delivery of capital investment and long term

1.3 Scope of the Assignment

The overarching objective of the project is to assist the cities in implementing a solid waste management intervention by developing a coherent model ISWM system in a medium-sized city, but replicable in the other cities of Pakistan. Capacity building is a second key objective that will help the provincial and local governments to move away from the present ad-hoc investments to strategic and sustainable development of their SWM sector in Pakistan.

The report includes a Situation analysis of the current situation of the city's SWM system approaching it from technical, institutional, and finance perspectives, identifying economic, social, environmental, and governance issues and opportunities. The opportunity for private provision of SWM services is identified in the report and will be covered in more detail in the blueprint. A detailed gap analysis follows from the analysis. Finally, an action plan is suggested on two levels i.e. short term 6 months and for next one year.

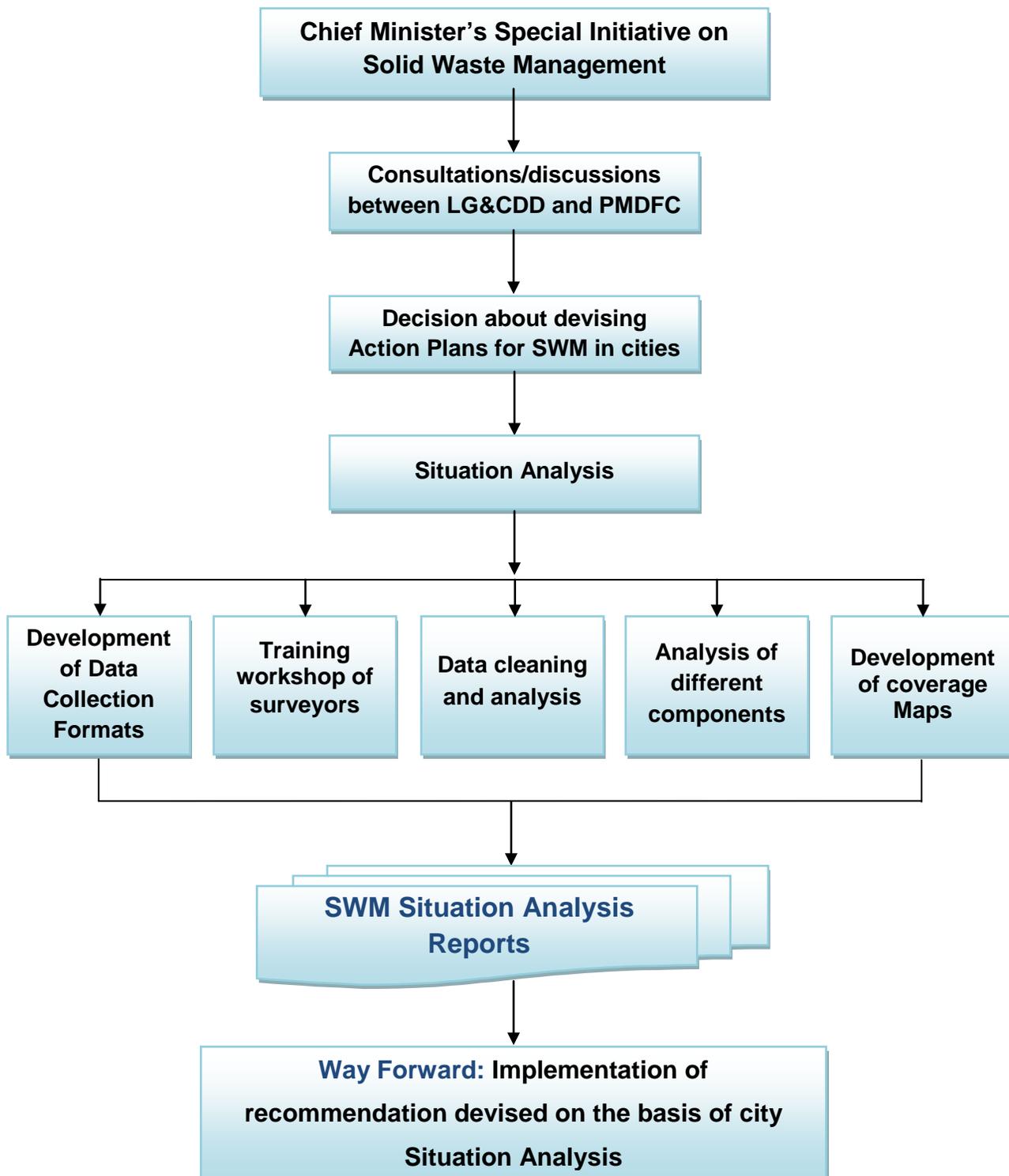
1.4 Approach & Methodology

PMDFC developed a proactive approach to develop the SWM Action Plans under the guidance of Local Government & Community Development Department (LG & CCD). Detailed brain storming sessions were held between them and consensus was evolved to undertake the rapid assessment of solid waste management of 63 TMAs. These 63 TMAs were selected from 105 TMAs excluding City District Government (CDGs). Those TMAs were selected that have adequate number of SWM collection machinery. A team of surveyors who were recently trained by Urban Unit, P&D Department were briefed by PMDFC officials and in data collection workshop held in Local Government Board office.

In the field secondary agency data was collected from TMAs by the surveyor about TMA institution, human resource, machinery, SWM primary Collection, Secondary Collection, Final disposal sites, Financials, parking areas etc on prescribed data collection formats developed by PMDFC. Qualitative information along with pictures was also collected in detail about quality of SWM service provided at each solid waste step. In addition, citizen response and public perception about TMA service was also gauged. Field SWM data was collected by surveyors and sent back to PMDFC. After field data collection exercise data was cleaned arranged and analyzed by PMDFC. GIS maps were developed for analysis. Main approach was identifying existing capacity of cities, identifying gaps and develops recommendations. Following process was adopted in this assignment:

Flow Chart

Dera Ghazi Khan – Situation Analysis (Solid Waste Management)



SOLID WASTE MANAGEMENT – GENERAL DESCRIPTION OF DERA GHAZI KHAN

It is located at 30°03'N 70°38'E. It is situated on the western bank of the Indus River. The nearest big cities are Muzaffargarh, Multan and Gujrat. It is a mid-country city located on the junction of all the four provinces of Pakistan.

2.2 General Information

Dera Ghazi Khan was founded by a Mirani ruler, Nawab Haji Khan Mirani, in 1476; he named the City after his son Ghazi Khan. Their close allies were Changwani and Khetran tribes in those days, game abounded near Dera Ghazi Khan and the fields were green. It was known as "Dera Phoolan Da Sehra" due to plenty of gardens and kastori canal, supplied by the Indus River and tehsil Taunsa Shareef is very famous in District Dera Ghazi Khan.

In 1909-10, this cradle of Mirani rule was inundated by the Indus. At that time, there was City built 10 miles (16 km) from the old City. It was laid out on a grid pattern comprising 66 blocks with wide long roads and streets. Two open spaces were planned in each block for social gatherings. Some of these have been encroached upon.

In the year 1913, the Municipal Committee came in to existence. At that time, the area of the City was very small. Physical growth continued and now the area was about 4 square miles (10 km²). The major growth of the City has taken place since 1947. The City has largely spread to the north and south; it could not expand to the west due to the danger of flooding torrents such as affected the City in 1955. However, growth has also taken place in the eastern side. Almost all of the new developments in north and east of the planned City are haphazardly built.

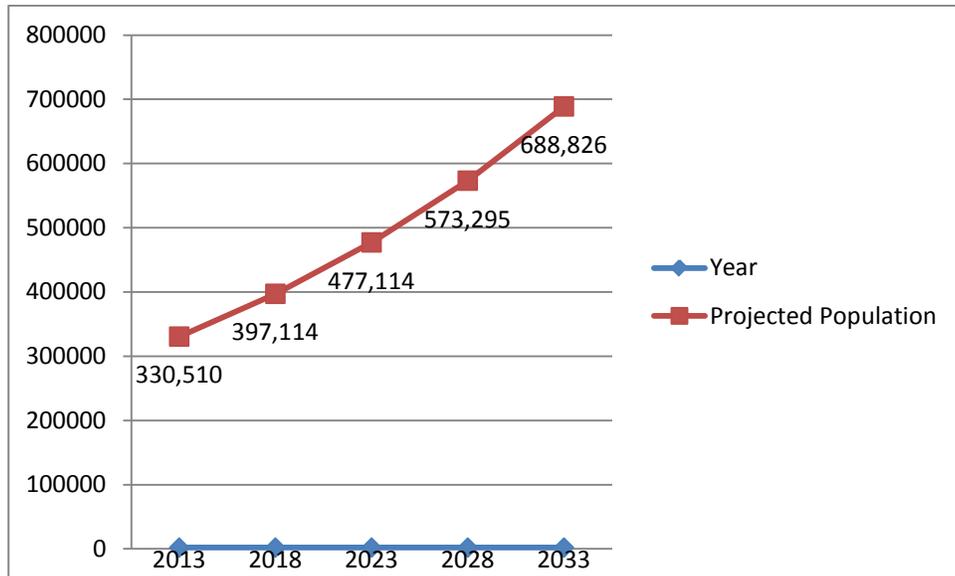
It has beautiful and unique landscape including Indus River, Green Fields, Pachad Desert and the Sulaiman Mountains.

2.3 Population

The Dera Ghazi Khan has population growth rate of 3.74 % as per 1998 Population Census, which is quiet similar to the provincial average. The population of Town was 190,542 individuals in 1998, and is currently estimated at 330,510 individuals. Given the population growth rate and using 1998 as the base year for arithmetic growth method estimation, the population of town is likely to increase to 688,826 individuals in 20 years from now (year 2033).

Town's Population Projection

YEAR	1998	2013	2018	2023	2028	2033
POPULATION	190,542	330,510	397,114	477,114	573,295	688,826



Projected Population

SOLID WASTE MANAGEMENT – SITUATION ANALYSIS

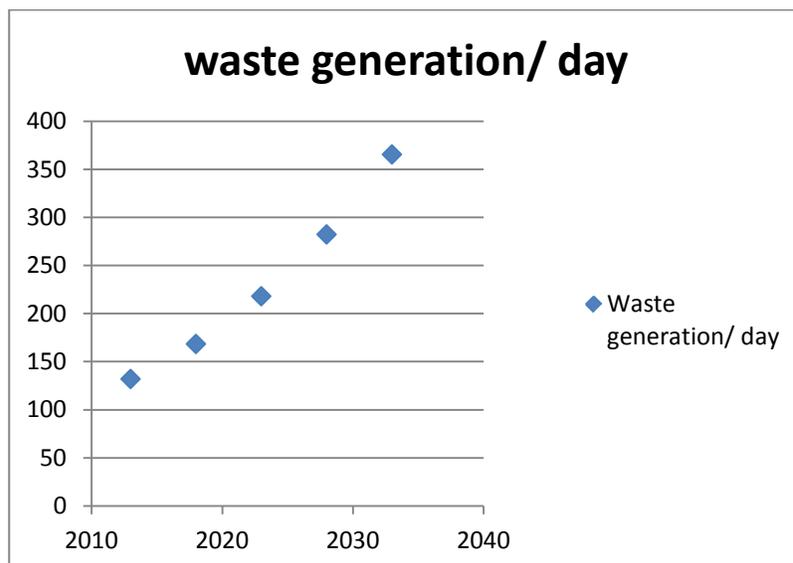
3.1 Solid Waste Generation

Given current estimated population parameters and national per capita solid waste standards, Dera Ghazi Khan currently generates about 132.20 tons of municipal solid waste daily, and is estimated to have a yearly volume of 48253 tons. In absence of a proper solid waste management system and non availability of data, such estimates and calculations are based upon rough estimates of current population X 0.4 kg/capita/day solid waste produced. *Solid waste generation in Pakistan ranges between 0.283 to 0.612 kg/capita/day* (http://epd.punjab.gov.pk/?q=solid_waste), therefore waste generation for Dera Ghazi Khan is assumed around 0.4 kg/capita/day.

Current **Per capita waste generation** is 0.4 kg per capital, which is likely to increase by 1.5% every year. The future estimations and projections are based on a compound method.

Due to its population growth and increase in its economic activity, DG Khan’s daily generation is expected to accelerate to about 218.22 tons per day (79650 tons per year) by 2023 using 0.457 kg/capita/day, and then to about 365.62 tons daily (133451 tons per year) by 2033 using 0.531 kg/capita/day as shown in graph. This is a massive amount of municipal waste for Dera Ghazi Khan. In future this may prove catastrophic, until a plan is devised and implemented at the earliest to cater for this uncollected waste.

YEAR	2013	2018	2023	2028	2033
Waste Generation/day	132.20 tons	168.59 tons	218.22 tons	282.46 tons	365.62 tons



3.2 Primary Collection

The primary collection is accomplished by sanitary workers those carry out sweeping of streets and roads and collect the solid waste from small heaps with the help of brooms, wheel barrows etc. and store at permanent and temporary collection points. Sixty (60) percent of localities in Dera Ghazi Khan are fully served while Forty(40) percent are partially served. Sixty percent roads in the city are being manually swept daily and no mechanical sweeping is being done as mechanical sweeper is out-of-order. As per standards there should be 414 sanitary workers and TMA has sufficient sanitary workers i.e. 324. There are 100 hand carts (90 out of order) which are not sufficient for present sanitary workers as per waste generation. Sanitary workers were not wearing safety equipment. No private sector was involved in primary collection.

Primary Collection - Situation Analysis Matrix				
Indicators	Existing Situation	Gap	Target	
			June, 2014	June, 2015
Door-to-door	None	100%	Initiate in one UC	Expand it to 50 % of city
Primary SWM Coverage* each day in localities	80 % Fully served, 20 % Partially Served	100 % Fully served	90 % Fully Served areas	95 % Fully Served Areas
Primary collection equipment	100 hand carts(90 out of order)	200 hand carts to increase primary SWM coverage	Procure 200 hand carts	Procure hand carts as per requirement
Primary SWM Coverage** each day in Roads	60 % Roads are manually swept daily, No mechanical sweeping is being done	40 % roads occasionally swept manually. Less mechanical sweeping is being done	Develop Plan for Mechanical sweeping, Procure 1 mechanical sweeper and repair out-of-order mechanical sweeper , mechanically sweep 25 % of main roads	50 % of Main Roads Mechanically swept
Primary Solid Waste Collection Staff***	324 Sanitary workers (45 posts are vacant)	Insufficient sanitary workers i.e 324 as 414 are required as per standard*	Hire 90 sanitary workers and fill 45 vacant posts. Develop and implement human resource deployment plan on GIS map	
Private Sector Primary Collection	Not Available	No Private sector involvement in Primary Collection	Initiate a pilot in one UC	Expand it to 50 % of city
* Coverage means TMA sanitary staff are sweeping & collecting waste from these areas daily (fully served), Partial Coverage means areas being served occasionally and not covered means these areas don't have any service (Shown in GIS Map)				
** Road Coverage means percentage of roads TMA sanitary staff are sweeping daily (Shown in GIS Map)				
*** 1 sanitary worker for 800 consumers (Outsourcing of Solid Waste Management in Sialkot City - Urban Unit). There are 324 sanitary workers in Dera Ghazi Khan. All sanitary workers are muslim. 23 sanitary workers are working in other sections of TMA.				

3.3 Secondary Collection

The secondary collection is accomplished through Fourteen (14) Tractor trolleys. Secondary collection machinery is not sufficient for Dera Ghazi Khan. (see Annex -1). Dera Ghazi Khan has open heaps scattered all over city and their locations keep on changing. Collection from many of these collection points is being done on daily basis. Collection efficiency is 60 % which is low. TMA also has to collect wastes from debris-demolition of building structures; Hospital wastes; Slaughter Houses wastes; Vegetable market; Dead animals etc. and those are mixed with municipal waste. Exact data of scavenging and for other hazardous wastes is not available with TMA.

Secondary Collection - Situation Analysis Matrix				
Indicators	Existing Situation	Gap	Target	
			June, 2014	June, 2015
Collection Efficiency	60 %*	40%	75 % Collection Efficiency	85 % Collection Efficiency
Secondary Collection Points	15 masonry enclosures and 48 covered steel containers 5m3(8 out of order)	Need 30 covered steel containers of 5m3 to replace open collection points.	Replace 50 % open heaps with covered containers of 5m3 size	Replace all open heaps with covered containers
Secondary collection machinery	14 tractor trolleys, 4 mechanized loader, 4 container carrier, 4 mechanical sweeper (1 out of order)**	Sufficient Machinery	Procure 2 Waste Compactors, Develop machinery deployment plan	Procure additional machinery as required including 7m3 compactors and 13m3 compactors
Waste transported in covered vehicles	Don't have covered Transportaion vehicles	Need temporary covers for transport vehicles	Cover all transport vehicles with temporary covers	
Slaughter house/Hospital/Hazardous waste	Mixed with municipal waste	Need to segregate and dispose these wastes from municipal waste	Segregate slaughter house and hospital waste and dispose thm separately.	Plan for regional hospital and hazardous waste collection and disposal mechanism
Private Sector involved in Secondary Collection	Not Available	No Private sector involvement in Secondary Collection	Initiate a pilot in one UC	Private secondary waste collection in 50 % of city
* Data Provided by TMA Dera Ghazi Khan				
** Machinery Details in Annex-1				

3.4 Final Disposal

In Dera Ghazi Khan the disposal of solid waste is mainly done in the form of open dumping near Bus Stand in the city (See GIS Map). This open dumping is creating total in-sanitary & unhygienic conditions, degrading the environment of the town, emitting obnoxious smells and providing breeding for mosquitoes and flies. Citizens complain about this dumping but presently, TMA has no other option for final disposal. Options for final disposal including composting for organic materials, regional based incinerators or regional land filling options must be explored.

Final Disposal - Situation Analysis Matrix				
Indicators	Existing Situation	Gap	Target	
			June, 2014	June, 2015
Final Disposal	Open dumping at site near Bus Stand	No proper final disposal option	Identify final disposal options and choose the most appropriate one for the city	Identify regional final disposal options including incineration, land filling etc.
Burning of waste at dumping/land fill site	Yes	–	–	–
Private Sector involved in Final Disposal	Not Available	No Private sector involvement in Final Disposal	Initiate a pilot project in one UC	Private final disposal for 50 % of city waste
* Shown in GIS map				

3.5 Social & Safety Safeguards

As shown in below matrix TMA Dera Ghazi Khan doesn't follow any of the recommended social & safety procedures. Also, no periodic medical check-ups or immunizations against tetanus and hepatitis are available to sanitary staff.

Social & Safety -Situation Analysis Matrix			
S. NO	Social & Safety Measures	Yes	No
1	Sanitary workers wearing protective clothes, boots, and gloves?		✓
2	Safety Gloves, masks, safety boots for primary collection being followed?		✓
3	Any arrangement for collection of domestic chemical waste and waste with high heavy metal content, such as batteries, broken thermometers, and infectious and other toxic health care wastes.		✓
4	At waste disposal sites, facemasks or simple scarves wrapped around the face are being used?		✓
5	Access to showers and cleaning facilities after their work shift?		✓
6	Immunizing against tetanus and hepatitis B.		✓
7	Periodic medical examinations or screening for sanitary workers?		✓
8	Any training for safety received through TMA?		✓

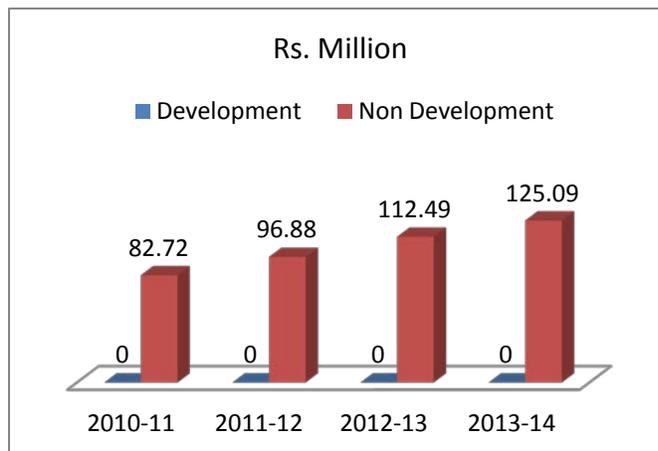
3.6 Operations & Maintenance

SWM machinery is being parked at two sites one near fire brigade office while other near City Park, Fire Brigade Parking at Railway Road. having a collective area of just 3 Kanal. It is an insufficient area and doesn't have proper garage or shades for the machinery. TMA Dera Ghazi Khan doesn't have a workshop for its machinery. They repair the machinery from a local contractor not registered with TMA. Machinery is repaired through ad-hoc basis and on demand from local contractor. This results in delay in repairs and loss in efficiency.

Operation & Maintenance - Situation Analysis Matrix			
Sr. #	Standards	Situation Analysis	
	TMA doesn't have a Workshop		
1	Local Contractor (Registered with TMA/Not Registered)	Yes	NO
			✓
2	Agreement with Local Contractor?	Yes	NO
			✓
3	Piece-meal arrangement?	Yes	NO
		✓	

3.7 Financial Analysis

Over the Period of last three years and current budgetary allocations depicts that TMA Dera Ghazi Khan did not commit any financial allocation on solid waste development sector and total budget consists of non development expenditures only. Moreover, it is also noted that major chunk of this non development outlay is on establishment head only. Effective O&M frame work is required to be developed to utilize POL and R&M heads efficiently.

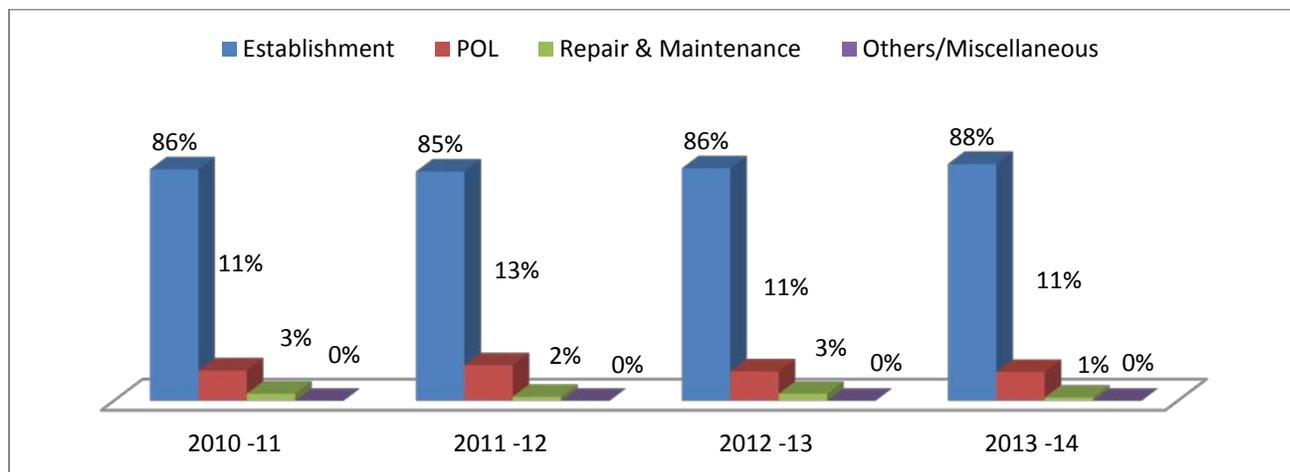


The detail of expenditures sector wise is given as under:

***Expenditure SWM (Rs. Millions)**

Sub-Head	Actual 2010-11 (Rs)	Actual 2011-12 (Rs)	Actual 2012-13 (Rs)	Budgeted 2013-14 (Rs)
Establishment	71.13	82.53	97.21	110.09
POL	9.40	12.88	12.33	13.50
Repair & Maintenance	2.18	1.47	2.95	1.50
Others/Miscellaneous	0	0	0	0
Development	0	0	0	0
Total	82.72	96.88	112.49	125.09

**Data provided by Finance Section- TMA Dera Ghazi Khan*



3.8 Human Resource Development

TMA Dera Ghazi Khan is facing severe problem in collection and dumping of Solid Waste. Due to rapid increase in the population of the city in the coming years will also generate more solid waste which needs to be cater with proper human resource planning and other capital resources. TMA Dera Ghazi Khan needs effective and efficient plans for proper disposal of increasing solid waste and dire need of trainings to the TMA relevant staff. Management Training Programs to improve solid waste management is highly neglected area in municipal sector. The Matrix below shows that higher and lower cadre of TMA Dera Ghazi Khan has got trainings on data collection and compilation on Solid Waste Management organized by PMDFC. This training helps TMA to conclude analysis of Solid Waste generation versus collection. So it is proposed that training on Solid Waste Management must be imparted to improve collection and disposal of solid waste, enhancing efficiency of TMA and creating clean city, healthier and pollution free environment.

***Current Status of Trained staff in TMAs**

Level in the Organizations	No. of Staff	No. of trainings received	Course/ Subjects	Institute/ Organization	Last training (Month – year)
TMO	01	-	-	-	-
TO (I&S)	01	-	-	-	-
Chief Officer	01	01	Data Collection / Compilation of Solid Waste	PMDFC	2011, 2012
Sanitary Inspector/ Supervisor	01	01	Data Collection / Compilation of Solid Waste	PMDFC	2011, 2012

**Information provided by TMA Dera Ghazi Khan*

Training Needed

Staff	Main problems/ hindrance in their performance	Required trainings	Way to impart training
• TMO	Lack of Managerial / Technical Expertise for effective Solid Waste	<ul style="list-style-type: none"> • Solid Waste Management, Project & Contract Management, Safety & Social safeguards, Efficient Procurement Management, HRM 	<ul style="list-style-type: none"> • Should be a mix of hands on and formal class room training as per requirement • Experience sharing workshops
• TO (I&S)		<ul style="list-style-type: none"> • Solid Waste Management, Project Management & Contract Management 	
• Chief Officer		<ul style="list-style-type: none"> • Modern Techniques of Solid Waste Collection, Transportation and Disposal, Safety & Social Safeguards 	
• Sanitary Inspectors (02)		<ul style="list-style-type: none"> • Solid Waste Collection, Transportation and Disposal • Handling of Machinery & Equipments • Health Safety Measures 	
• Sanitary Workers (302 Nos.)		<ul style="list-style-type: none"> • Solid Waste Collection • Health Safety Measures 	

3.9 Citizen Complaint Registration and Resolution

Complaint Cell has been functional in TMA Dera Ghazi Khan since July 2011 for complaints registration, tracking and resolution. A shared room is available with designated Complaint Cell In charge where complaints are registered in the physical presence of complainant as well as telephonically. Land line number is also available in complaint cell. PMDFC assisted TMA in the establishment of Complaint cell and provided trainings and hardware support in this context. Initially, PMDFC provided standardized registers and later replaced these registers with desktop complaints software to register the complaints in a standardized form. Further PMDFC also introduced web based complaint software. Now the complaint record is available in a systematic manner in each TMA. TMA Dera Ghazi Khan resolved approximately 80% of complaints received on primary and secondary collection of solid waste during July – Nov 2013.

Registered complaints are addressed by the TMA staff in comparatively less time through computerized applications provides a unique feature of accountability available to the upper management. Complainant gets a unique number of his complaint that helps him to track his complaint. It is to be noted that all complaints are not registered specially received through telephone; most of these are resolved without keeping record. Currently TMAs are not fully utilizing the computer applications and need to fully adopt it in effective manner. When complaint is registered, time of registration and resolution is also tracked by the CTS software.

It is likely to improve the oversight and monitoring of municipal service delivery which would result in the satisfaction of ultimate stakeholders i.e. citizens.

Sr. #	Standards	Situation Analysis	Proposed Action
1	Complaint Cell is functional with designated room and staff	Yes	Functioning of TMA Complaint Cell should closely be monitored from high ups to facilitate public
2	Land numbers functional	Yes	
3	Awareness campaign (Banners, Press releases and media campaign)	Awareness Tools i.e. banners TV Cable were used for awareness campaign but citizens are still not properly aware of the Complaint Cell and registration process.	Regular awareness campaigns are required to be launched time to time
4	Complaint centre staff trained	Yes, Training of SOP's on regulating registration and tracking process of complaints	Hand holding of staff for better resolution of citizen's complaints
5	Complaint resolution	Most of sanitation related complaints are resolved within a day	Daily Status report of complaints should be overseen by TMA leadership Refresher on Complaint cell SOP's is highly recommended periodically
6	Analysis of complaint data performed and regular reports generated	TMA is using the complaint computer application software	Continued use of computerized complaints software is highly recommended for better analysis of complaints and to highlight grey areas for effective decision making

3.10 General Public Opinion

Perceptions of citizens regarding solid waste management of TMAs have been captured by the following few attributes that can help in understanding the formation of Citizen's perception about the situation of Solid Waste management in the City Dera Ghazi Khan, Focal Group discussions were made in the city in four different localities in the city and people's response was recorded as follows:

Sr.#	Attributes	Perception	Responses (%)
1	Does improvement in Solid Waste Disposal is required in the area?	1. Important but not significant 2. Not required	75% 25%
2	What type of problems caused with adverse sanitation situation in the city?	1. Epidemic 2. Environmental Pollution 3. Don't know	50% 25% 25%
3	What is the present method of primary collection of solid waste in the area?	1. Personally dispose of household waste in containers/bins placed by TMA 2. There are no arrangements for primary collection	75% 25%
4	What is the present method of cleanliness of streets?	Cleanliness by TMA sanitary worker	100%
5	Are there any informal dumping points in the neighborhood	1. Yes, those are one of the major source of environmental pollution 2. No such dumping points are there in the neighborhood	75% 25%
6	What is best arrangement for improved solid waste disposal in the area	Only Govt. Agency	100%
7	Have any solid waste collection containers / Litter bins been placed in the neighborhood?	1. Yes, very near 2. Yes, too far 3. No such containers/bins are there in the neighborhood 4.	50% 25% 25%
8	Are they paying for primary collection of solid waste and cleanliness of streets?	Never paid	100%
9	Are they willing to pay for primary collection of solid waste and cleanliness of streets to TMA?	1. Yes, less than Rs. 100 to private worker 2. Not willing	100%
10	If they are not willing to pay to TMA what are the reasons?	1. Not affordable 2. Don't know	25% 25%

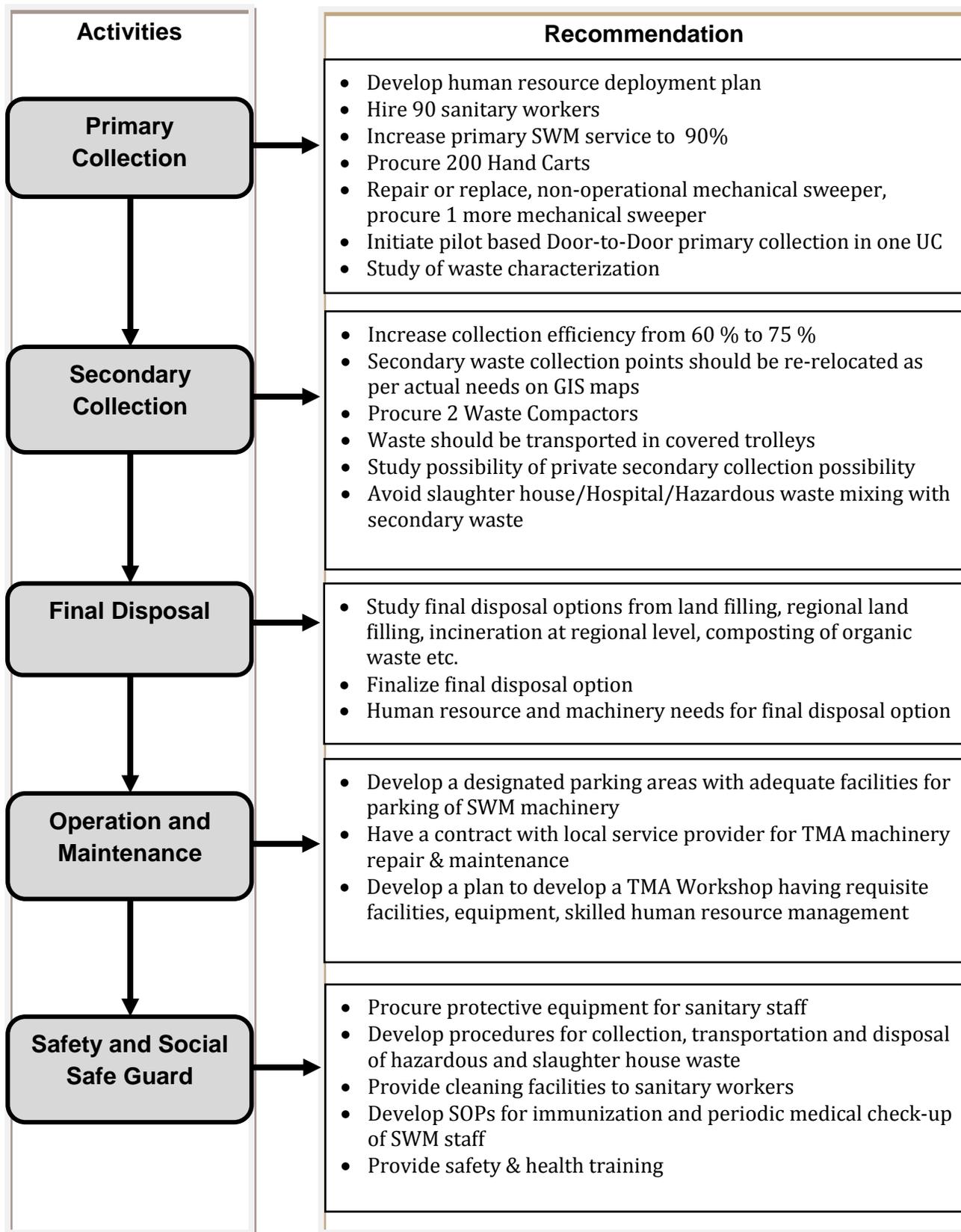
Sr.#	Attributes	Perception	Responses (%)
11	What improvement of services expected, if they have to pay	1 Availability of formal dumping points 2 Cleanliness of streets on regular basis 3 Don't know	25% 25% 50%
12	For which purpose, they are willing to pay	1 Door to door solid waste collection on regular basis 2 Cleanliness of streets on regular basis 3 Don't know	25% 25% 50%
13	What is the schedule of solid wastes collection in the area?	Alternate a day	100%
14	Complaints relating to Sanitation?	No Yes, pls explain Sanitation is a bigger issue i.e. water on the roads, SWM workers are not efficiently working	25% 75%
15	Do you have any suggestions related to sanitation improvement?	No Yes, pls explain Sweeping/cleaning of streets & roads, Improvement in TMA service level and training of solid waste staff	25% 75%

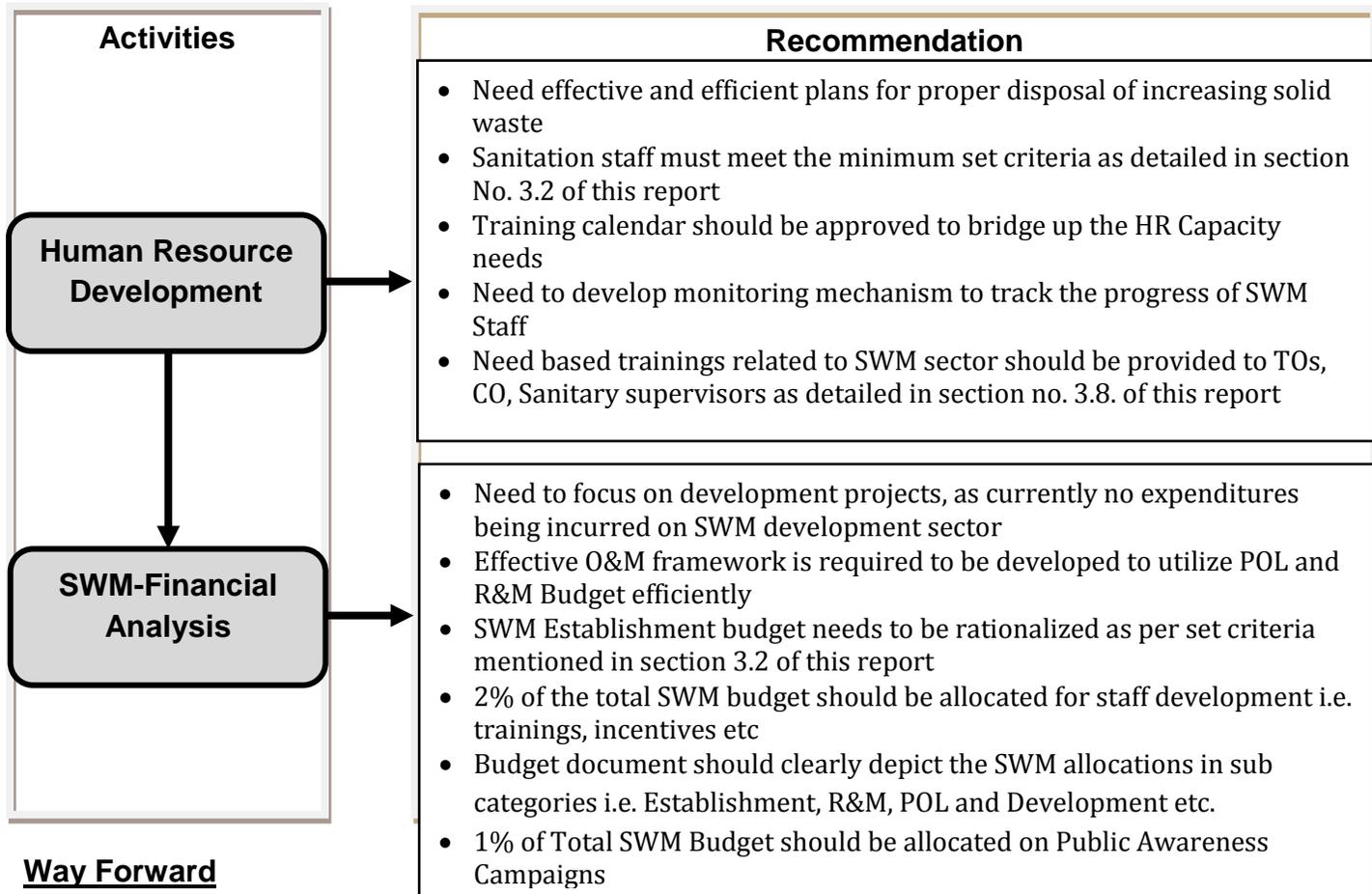
It shows that improvement in the solid waste management is significantly required in the city.

TMA is providing the services of primary collection and cleanliness of streets without getting any charges. Since citizens are facing the problems of epidemic and environmental pollution in the area, it means secondary collection of solid waste management requires improvement.

Citizens expect improvement in the solid waste management through door to door collection and cleanliness of streets on regular basis, if they have to pay against services. They also consider only Government agency can bring improvement in the solid waste sector.

SOLID WASTE MANAGEMENT – RCOMMENDATION & WAY FORWARD





Way Forward

- Waste Characterization Studies (Sample TMAs)
- Development of GIS based SWM Maps
- Resource Management Plans
 - Human resource management plans (using GIS Maps)
 - Plans for Optimum use of existing Machinery (using GIS Maps)
 - Requisite Budgetary Allocations
 - Outsourcing for SWM systems
 - Procurement Plan
- Plans for final disposal sites
 - Identification of final disposal options (land filling or regional land filling, regional incineration, composting etc.)
 - Acquiring of Lands for final disposal options
- Sustainability Plans
 - Trainings
 - Development of Training Modules
 - Training for various tiers of TMA officials
 - Public Awareness Plans
 - Occupational Health and safety Plan
 - Environment and social management Plans
 - Operation & Maintenance Plans
 - Monitoring and Evaluation Framework
 - Periodic data analysis is to highlight the gaps in terms of taking required corrective measures

Annexure - I

Annex-I

Tools & Equipment

Sr. No.	Description	Numbers available		
		<u>Total</u>	Out of order	Working
1	Wheel barrows/hand carts	100	90	10
2	Masonry Enclosures	15	x	15
3	Covered containers	48	8	40
4	Tractor trolleys (auto unloading)	14	x	14
5	Mechanized loader equipment	4	x	4
6	Container carrier	4	x	4
7	Mechanical sweepers	4	1	3

Machinery Details				
Tractors	Make (Model/Year of manufacture	Condition of Body	Condition of Engine	Condition of Tyres
DGG	1995	Fair	Fair	V. Bad
DGG-1011	2007	Fair	Fair	V. Bad
DGG-1323	2007	Fair	Fair	Bad
DGS-1448	2006	Fair	Fair	Not Working
DGS-1452	2007	Fair	Fair	V. Bad
DGG-2316	1995	Fair	Fair	V. Bad
Trolleys	Make (Horse Power)/ Model/Year of manufacture	Condition of Body	Condition of Engine	Condition of Tyres
DGG-2316	1995	FAIR		V. Bad
DGG-1448	2006	FAIR		V. Bad
DGG-2314	1995	FAIR		Fair
DGG-2315	1995	FAIR		Fair
DGG-2317	1995	FAIR		Fair
DGG-8894	1997	FAIR		Fair
DGG-8895	1995	FAIR		Fair
New Mesi-240	2007	FAIR		Fair
DGS-1323	2007	FAIR		Fair
Mechanized Loaders	Make (Horse Power)/ Model/Year of manufacture	Condition of Body	Condition of Engine	Condition of Tyres
DGG-8893	1997	FAIR	FAIR	V. BAD
DGS-1009	2007	FAIR	FAIR	BAD
DGS-1326	2007	FAIR	FAIR	FAIR
DGS-1010	2007	FAIR	FAIR	FAIR
Container Carriers	Make (Horse Power)/ Model/Year of	Condition of Body	Condition of Engine	Condition of Tyres
T02	2012	GOOD	GOOD	GOOD
T04	2012	GOOD	GOOD	GOOD
DGS1449	2007	FAIR	FAIR	FAIR
DGS1451	2007	FAIR	FAIR	FAIR
Mechanical Sweepers	Make (Horse Power)/ Model/Year of manufacture	Condition of Body	Condition of Engine	Condition of Tyres
"4"M. Sweepers are here	2012	Excellent	Good	Good
	2012	Excellent	Good	GOOD
	2012	Excellent	Good	GOOD
	2012	Excellent	Good	GOOD

Annexure – II

<p style="text-align: center;"><i>TMA D.G.Khan</i></p> 	<p style="text-align: center;"><i>Primary Collection</i></p> 
<p style="text-align: center;"><i>Primary Waste Collection</i></p>	<p style="text-align: center;"><i>Waste</i></p>
	
<p style="text-align: center;"><i>Waste Container</i></p>	<p style="text-align: center;"><i>Waste Container</i></p>
	

Container



Waste loading



Loading container



Waste Depot



Dumping site



Dumping site

