

# **Policy Options Framework for Solid Waste Management in Sindh**



**Program Support Unit  
Devolved Social Services Program  
Finance Department  
Government of Sindh, Karachi**

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# **Policy Options Framework for Solid Waste Management in Sindh**

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## **Abstract<sup>1</sup>**

*In this report an attempt is made to represent the policy options framework for Solid Waste Management (SWM) at provincial, district and TMA level in Sindh. The main objective of the government is to formulate SWM policies through consultative process achieving broad ownership of the civil society and stakeholders and accomplish substantial outputs which are tangible, economically viable and sustainable.*

## **1. Preamble**

The formulation of Solid Waste Management Policy for Sindh is a process that encompasses federal environmental and development policy framework guidelines, consultative process of the stakeholders and technical and financial assistance of the donor agencies. The provinces translate the broad policy outlines provided by the federal government through evolving their own policy framework ensuring its conformity with the federal policy. Now at all levels, the process of stake holder's consultation is an imperative, in order to achieve economically viable and sustainable targets with broad ownership of the society.

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## **2. Post Devolution Scenario of Solid Waste Management**

### **2.1 Introduction**

The devolution plan of 2001 for the local governments identifies the Union Councils within a Taluka, as the unit of governance at the grass root level, while a whole number of contiguous Unions forms a town. Each union council is designed to have a population between 50,000 to 60,000 while that of each town council has to be within 0.5 million. Sindh has 16 district governments including City District Government of Karachi, 18 Town Municipal Administrations in Karachi and 84 Talukas Municipal Administrations in rest of the province. As per Census of 1998, the population of Sindh was 30 million (app), 48.75% of which live in the urban areas. Sindh has a higher urban population growth rate of 3.44% than the national rate of 2.61%, which indicates that its urban areas are bearing the increasing burden of immigrating masses.

### **2.2 Synopsis**

Only 19% of Sindh has proper disposal of waste solids (collected by any municipal institution, solid waste management department or by a private company) (Annex. - F). This ranges from 47% in urban only to only 1% in the rural areas. In the areas outside Karachi, only Hyderabad (18%) and Sukkur (13%) have more than 10% of the households with proper disposal facilities (influenced by their urban populations), while all the other districts of the province show less than 10%. In Karachi, Gadap, SITE and Bin-Qasim towns have the lowest percentage of proper disposal (under 20%). In the small towns only about 30 to 40 percent of the solid waste is lifted from the central areas out of which about 50 to 70 percent is transported to the dumping site. Most of the solid waste consists of organic material. The sanitary staff

collects garbage from the city streets but then dumps it in the open instead of designated places.

### **3. Policy Analysis**

#### ***3.1 Legal Perspective***

According to Sindh Local Government Ordinance (SLGO 2001), 54 (iv), the “Sanitation and solid waste collection and sanitary disposal of solid, liquid, industrial and hospital wastes” is the responsibility of Taluka Municipal Administration whereas section 54-A (P) (iii), Town Municipal Administrations have the powers for “Solid waste collection and conveyance to transfer stations designated by the town but excluding treatment and disposal of waste” (Annex. - E). Therefore, the TMAs role in Karachi is only confined to collection and transportation of waste whereas the final disposal site has to be managed by CDGK. Except Karachi, the other TMAs in Sindh have the responsibility of SWM from generation to the final disposal.

This distinction of function portrays different set of responsibilities for TMAs of Karachi and TMAs of rest of the province. For Karachi, having an integrated SWM system, an issue of coordination and cohesiveness of TMA leadership vis-à-vis CDGK is required to achieve harmony for a successful system. In this sense, rural TMAs are in a better position to carry out integrated planning of solid waste in their jurisdiction.

#### ***3.2 Administrative Concerns***

TMAs of rural areas have the sole responsibility of water supply, sanitation, and solid waste sectors. Thus they have to disperse their meager resources for the development of geographically distant population. On the other hand, Karachi has integrated Water supply and Sanitation and TMAs only maintain the pipelines. From an administrative viewpoint, it makes it easier for Karachi’s TMAs to pay attention to the SWM and improve the delivery of services.

Being a major urban industrial town, Karachi generates more SWM than other cities of Sindh. According to Poverty Ranking of Districts, former Karachi Division, or current jurisdictional limits of CDGK are the richest in Sindh, followed by Hyderabad and then by other rural districts of Sindh. Thus beside population, the factors of poverty ranking and amount of commercial and industrial activity are the determining factors for greater per capita volumes of garbage generation in Karachi.

According to some senior officials of Sindh Local Government, the deteriorating SWM situation is because of the broader role assigned to districts and TMAs under SLGO 2001 which delegates the development function from the provinces to the districts causing a shift of focus from sanitation and solid waste to Mega Projects of development.

The increasingly worsening situation has compelled the CDGK to seriously review their priorities and now the SWM is being provided prime consideration and efforts are being made at the provincial, district and TMA level to resolve the issue with a sustainable solution, which can cater the present as well as future requirements of the city.

According to SLGO 2001, in Karachi, solid waste is collected and transported by the TMAs but the City District Government manages the final disposal sites. The integral nature of this system requires intervention for improvement at all stages of garbage handling including collection, sorting, transportation, and final disposal. Beside 18 towns, Karachi has 11 Cantonment Boards and some areas managed by other government agencies like Pakistan Railways and Karachi Port Trust for which the SWM strategies are not available. This multitude of functional agencies pose a problem in the integral management of the SW system, especially when some of the departments like Pakistan Railways and KPT are federally administered and CDGK has no administrative or regulatory authority over them. The provincial government too, faces the same dilemma as the federally administered

departments fall beyond their jurisdiction. Thus to achieve a consensus on integrated SWM system in Karachi, a coordinated effort of federal, provincial, District and TMA level is required, needless to say other stakeholder also need to be taken into confidence.

### ***3.3 Financial Resources***

The Taluka or Town tier of Local Governments has generally received less attention in both the pre-and post-devolution eras. They have especially borne the financial crunch because of the government's withdrawal of Zila Tax levied by Union Councils until the late 1990s. The history of releasing the share of Local Governments in General Sales Tax (GST) in lieu of Zila Tax has not been very encouraging. It is only during the financial year 2004-5 that the TMAs have received enough amount of GST to pay their staff salaries and meet other non-development expenditure and still save some for development works. In this backdrop, the DSSP funds for the TMAs have proved a whiff of fresh air for them. The amount though not enough to solve all their pressing problems, it still promises to positively impinge upon the social indicators of the TMAs.

In Sindh, Solid Waste Management requires to be managed as a separate sector and a data based should be made for its financial, human resource, logistic and other aspects. Currently, the only determinant for fiscal priority is the number of schemes which are included by the LGs for this sector. CDGK has, however, worked out the combined transportation cost per day including Salary, fuel and maintenance, of all TMAs is 1.08 million, thus an approximate cost of 400 million is incurred annually.

The concept of user charge or Tariff for SWM is non-existent in Sindh. Unlike developed countries, this sector is entirely funded by the public money without any returns. Thus without any income, the cycle of SW funding cannot be developed. The tariffs can only be introduced when

the LGs would develop and gain public confidence in the delivery mechanism of public services.

## **4. Capacity Concerns**

### ***4.1 Training Needs***

In Karachi, at the CDGK level, District Officer SWM who reports to EDO Works and Services handles SWM. The main responsibility of DO SWM is the management of landfill sites. In the TMAs of Karachi, TO (infrastructure) is responsible for overall collection and transportation of SW to the landfill sites. TMAs in Karachi as well as rural areas have officers and officials experienced in Public Health Engineering works; however, modern practices of SWM have generally not been adopted for which one reason is also lack of relevant expertise. There is a strong need to provide regular training to the officers and officials to understand and adopt best practices in the field of SWM.

### ***4.2 Logistics' Scenario***

TMAs in Sindh generally, complain of logistic gaps in SWM management to acquire the required level of efficiency. In most of the rural TMAs, Solid Waste is disposed off in a rudimentary fashion without the help of manual labor, donkey carts and trolleys and disposed off in a ditch or open ground thus in the absence of any proper landfill site.

The existing sources of CDGK also portray logistic gaps in terms of number of garbage vehicles, which is only 543 with the useable number around 453, thus insufficient. A replacement of 284 vehicles and addition of 95 more vehicles would cost an amount of 1.9 billion to the government's exchequer.

### ***4.3 Human Resource Deficit***

Some of the TMAs complain of shortage of labor coupled with the provincial government's policy of ban on recruitment. CDGK has calculated that requirement of one sanitation staff per 500 people by virtue of which their total requirement is the manpower of 28000 for the city. But the available manpower is around 11000 thus indicating a gap of 17000 people. This will escalate the cost of manpower from 675 million to 1344 million per year. The most evident feature of this demand is based on the fact that emphasis is still being laid on the procurement of manual labor rather than mechanization of the system. However, the provision of improvement in HR would definitely have a positive impact on the delivery of SWM services. Funding is clearly an impediment in this sector where almost all the TMAs demand more funds from the government to fill their resource gap.

### **4.4 Fiscal Incapacity**

The urban TMAs have a greater advantage of switching to Privatization of various civic services but the rural TMAs are facing the difficulty of non-existent markets/demand for outsourcing their service deliveries, specially SWM. One of the main reasons is that rural areas generate more organic material and less recyclable material thus fails to provide a greater incentive for recyclers and contractors to invest in this field. Though composting is a good option but manure is available in abundance in the rural areas, thus compost does not have a very high demand.

## **5. Awareness Issue**

According to Census 1998, the literacy rate in the urban areas of Sindh is 65.2% whereas it is 26.90% for the rural areas which shows clear disparity. This difference can be linked with awareness regarding environmental issues including SWM issues, thus one reason for lower

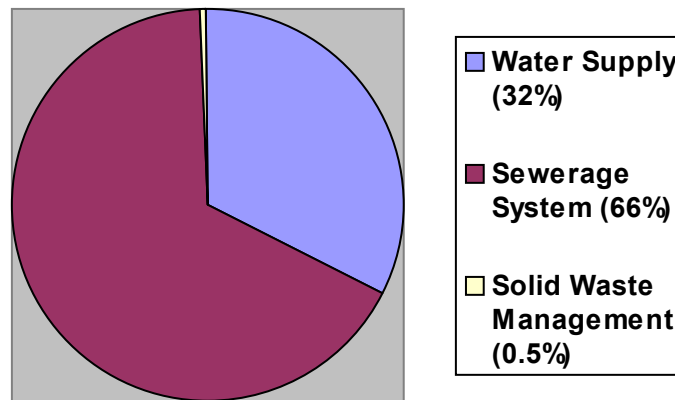
priority of SWM in the rural TMAs. There is a strong need of media support as well as integration of environmental values in education to alter public behavior for improving the SWM situation in Sindh.

## 6. Allocation Trend Analysis

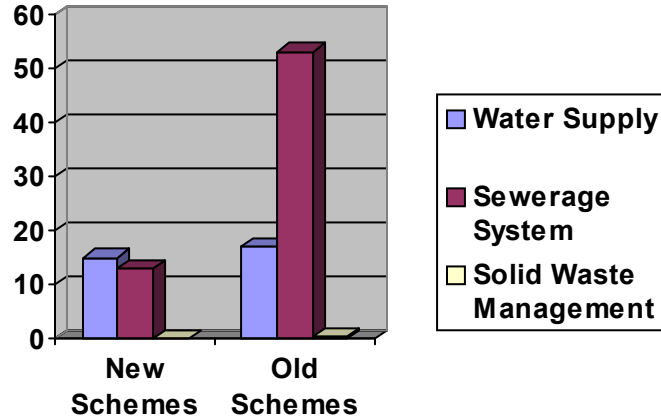
We observe different trends regarding conception and priority of solid waste management in Sindh. There is a clear divide between urban TMAs specially Karachi and rural TMAs with mid-sized and smaller cities. Needless to say, these peculiarities are based on ground realities which are different with urban and semi urban TMAs.

The WSS sector releases of DSSP reflected many of such trends. For instance, an analysis of sample 16 rural TMAs, carried out by Mr. Imtiaz Bhatti, Program Officer, DSSP, reveals that out of the according to their Annual Sector Plan, they intend to spend 32% on water supply, 66% on sewerage and only 0.5 % on SWM. An amount of Rs. 88 million was released to these 16 TMAs and their utilization ratios are given in Figures below.

**Figure 1: Ratio of expenditure on Water Supply, Sewerage System, and Solid Waste Management**



**Figure 2: Proportion of amount spent on new and old schemes**



Contrary to this trend, urban TMAs of Karachi are largely limited to catering to only the solid waste management (SWM) aspect of WSS. Infact some of the TMAs like New Karachi have spent 100% of Rs. 7927479 from the DSSP allocation on improvement of Solid Waste Management sector. The most plausible explanation of this phenomenon is that the TMAs of rural areas have the sole responsibility of water supply, sanitation, and solid waste sectors whereas Karachi has integrated Water supply and Sanitation with the limited role of TMAs to maintain the end user distribution system including pipelines. Thus TMAs in Karachi have the advantage to pay attention to the shortfalls in SWM and improve the delivery of such services.

## **7. TMA Badin, a Rural Example**

IUCN Pakistan, under the Pakistan Environment Program (PEP), and in collaboration with the Badin District Government, developed a proposal for solid waste management in Badin Town in December 2004, under the auspices of the Badin District Vision (BDV) (Annex. - G). The entire activity was carried out under the Badin District Umbrella. A detailed survey was carried out to ascertain the existing solid waste situation in Badin. The survey included site visits, meeting with the people concerned and a review of the relevant documents.

Based on situation analysis and literature research, a strategy and proposal were developed.

Badin generates about 25 tons of SW per day excluding and slaughter house waste. This amounts to an average 0.4 kg of waste per person per day based on a population of 62,843 as per 1998 census. This waste is lifted by a tractor trolley, which makes three trips everyday and carries about 4-5 tons of waste per trip. This implies that sanitary staff lifts a maximum of 50% of the total waste only. In the similar manner other shortfalls of the system have also been identified. A strategy has been proposed to tackle the growing problem of SWM with emphasis on institutional strengthening of the line institutions, making SWM financially sustainable and raising awareness among the general public. IUCN plans to request the TMA Badin to incorporate the strategy for SWM in their next Annual Sector Plan to bring about improvements in this sector.

## **8. Karachi, a Peculiar Case**

### ***8.1 Current Realities***

Due to the peculiar nature of SWM in Karachi, requiring integrated management as well as diverse stake-holders involvement, a separate account of Karachi is provided for analysis.

According to UN sources, the population of Karachi in 2005 would be 11,830,000. Other sources have varying statistics with some estimates around 15 million also. The megapolis of Karachi generates three types of Solid wastes that are Municipal, Industrial and Hospital/hazardous wastes.

Local government department reports that an estimated 6113 tons per day of garbage is generated in 18 towns of Karachi, out of which 5057 (82.72 %) tons is lifted and 1057 (17.29 %) tons remains as backlog. In addition to the garbage lifted in 18 towns, 5 cantonments in Karachi

namely Clifton, Faisal, Malir, Karachi and Korangi generate 311 tons of garbage, which has privatized lifting arrangement at the cost of 197,000 rupees per day. About 20% of the garbage is recycled at source through scavengers and the informal recycling industry.

The recent survey of SW sponsored by CDGK reveals that the waste generation in Karachi is around 0.300 kg / cap / day in which the total household waste is about 4,500 tons/day and total waste of the city is about 6,300 tons/day (Annex. - H). According to EPA Sindh, an estimated amount of 2.7 tons of medical waste is generated by 200 hospitals of Karachi. This waste is disposed through 2 incinerator plants at Mewashah running at a capacity of 15 - 20 %, which forms a huge gap for effective handling of amount of waste. Garbage lifting costs Rs. 1.08 million per day and on average Rs. 233 per ton expenditure is incurred on transportation of garbage. According to the Urban Resource Center (URC) report, 37 percent of the population of Karachi lives in squatter settlements for which the access to sanitation facilities is minimal. This situation adds to the inefficiencies in the garbage collection.

Karachi has an informal recycling industry through which 600 tons of recyclable material is picked up by scavengers. This recycling industry provides employment to more than 55000 families and has annual turn over of Rs. 1.2 billion with more than 1000 units operating.

## ***8.2 Key Impediments***

The problems existing in SWM sector of Karachi are cross cutting and involve administrative, financial, technical and capacity related issues which are present in the primary, secondary and final stages of Solid waste management system in Karachi (Annex. - I).

1. In the primary stage which includes collection of garbage from house hold to dust bin sites, some of the major problems are poor attendance of the sanitary workers, gradual decrease in the number of dustbins with a large number of containers lying in the workshop for

repair and haphazard accumulation of garbage on streets, open spaces and drains.

2. The secondary stage is the transportation from dustbins to the landfill sites and is marred with out of order garbage vans, which account for 15 - 20 % of the total vans, location of landfill sites, which range from 10 to 70 kilometers from the collection points. Thus this situations leads to offloading of hardly 300 - 400 trips of garbage vehicles out of 1500, the rest of trips end up in informal dumping sites in and around the city.

3. The final stage of garbage disposal comprises of disposal at landfill sites. The total number of landfill sites available for the city of Karachi is two, which are insufficient with an estimated distance of 30-35 kilometers from the city center. There are two unofficial landfill sites also. However, all these sites are improperly managed and no system of recording the trips of garbage vans exists.

### **8.3 Preceding endeavors**

Local Government Department, Sindh government, in the past made various efforts to resolve the issue of solid waste management in Karachi. Waste management methods with the incorporation of some grass root technologies have not been successful so far. These efforts include establishment of compost fertilizer plant located in North Karachi, which had a total capacity to produce 148,000 tons of garbage annually. The plant could not operate successfully as the supply of garbage remained erratic and were shut down only after one and a half years of its operation. Due to acute problem of dumping at site, the defunct KMC (Karachi Municipal Corporation) started a garbage train to a 3,500-acre landfill site 35 km away from the city center at Dhabeji. The garbage train had about 75 wagons to carry 1600 tons of garbage per trip. This system also failed at the collection and transfer stages of garbage disposal and the train only ran only two times and never could carry more than 1000 tons of garbage. Likewise, privatization of

sweeping, lifting of garbage and transportation by some DMCs was also carried out. All these efforts were, however, unsuccessful and were suspended for various reasons.

## **9. Realizing the Policy Interventions**

Developing the Solid Waste Management Policy for Sindh is a progression that adheres to the federal environmental and development policy framework guidelines. The consultative process incorporates the concerns of all the stakeholders in the policy whereas and technical and financial assistance of the donor agencies acts as a catalyst to the process. An overview of the policy outlines provided by the federal government reveals the parameters within which the provincial and LGs have to operate and develop their policy framework. Brief description of such policy outlines is provided as: -

### **9.1 Policy Framework Guideline Documents**

#### ***9.1.1 Medium Term Development Framework (2005-10)***

The major federal policy directives are in the form of Medium Term Development Framework (2005-10) (Annex. - A). The National Economic Commission (NEC) in June 2004 authorized the Planning Commission of Pakistan to prepare the five-year plan 2005 - 10 and present the draft to NEC. The development of MTDF is based upon a broad based consultative process. The Midterm Development Framework (2005 - 2010) has been evolved keeping in view the value system of the society and its ultimate determinant of its economic growth. The MTDF provides a framework for translating the vision 2030 during 2005 - 2010. It aims to consolidate the macroeconomic stability and rationalize the public private mix in the development process.

MTDF, which is in the draft phase, recognizes that urban areas of Pakistan generate 54,850 tons of solid waste daily out of which 60% of municipal solid waste is collected while rest remains unattended along roadsides. Segregation of hazardous component from domestic waste is also non-existing. MTDF recommends that in the solid waste sub-sector, the government should: -

1. Promote and practice integrated solid waste management (ISWM) by selection and application of appropriate techniques, technologies and management programs.
2. Establish effective waste management system in urban areas / major cities.
3. Promoting composting and generation of energy from waste by the private sector.
4. At all levels, promote the hierarchy of waste management (i.e, reduce, reuse, recycle, recover) and encourage waste separation to maximize flexibility to deal with future changes.
5. Strengthening the capacity of relevant institutions, specially City/District Governments, to deal with solid waste management issues effectively.

MTDF proposes the action plans / programs in the environment sector, related with SWM, which provide: -

1. Develop and implement community level SWM projects (related to segregation, collection, composting, recycling and disposal etc).
2. Promote and support partnership between civil society, private sector and government institutions for more efficient SWM.
3. Award recycling the status of an industry to formalize this important link in the process of waste management. Exempt recycling machinery from customs duty.

4. Initiate nation-wide awareness campaign on littering.
5. Establish at least two model, scientifically designated, landfill sites in the country.
6. The issue of eradication / replacement of plastic shopping bag be tackled on priority.

In order to better manage hazardous wastes, MTDF suggests building the capacity in all EPAs and other related institutions to regulate hazardous substances / wastes. In terms of environmental targets, two sanitary landfill sites would be the targets for 2010-2011.

MTDF would be finalizing through consultative process in which all the provinces of Pakistan have been involved. In the provinces, the entire relevant departments have been involved in the consultative process. In order to address the SWM issue, Planning and Development Department, EPA Sindh and LGD were asked to provide their views on the subject. EPA Sindh has suggested the establishment of at least one landfill site in all the mega cities of the country. MTDF provides a guiding document for the provinces to evolve their solid waste management strategies and Sindh has already started to formulate the framework of its SWM policy following the broad policy principals provided by the federal government.

#### ***9.1.2 National Environmental Policy (NEP)***

The National Environmental Policy (2005 - 2015) (Annex. - B) is being prepared through a consultative process, to provide an overarching framework for achieving the goals of sustainable development through protection, conservation and restoration of Pakistan's environment.

NEP also recognizes SWM as a key environmental issue. Under the guiding principle of sustainable development and extensive participation of communities, stakeholders and the public, it recognizes as SWM as important issue suggesting the following measures: -

1. Develop and enforce rules and regulations for proper management of municipal solid waste and industrial, hazardous and hospital waste.
2. Develop and implement strategies for integrated management of municipal, industrial, hazardous and hospital waste at national, regional and local levels.
3. Strengthen capacity of institutions involved in waste management
4. Encourage involvement of private sector in SWM
5. Establish facilities for the recovery of raw material and energy from waste
6. Create market for recovered and recycled materials.
7. Promote research and development focusing on low-waste technologies and technologies for waste recovery and reuse.

Among the benchmarks, the policy intends to achieve, by 2010, 10% reduction in the quantity of solid waste generated in the country. In order to place a monitoring framework to ensure the effective implementation of the policy and oversee the progress in this regard, a “National Environmental Policy Implementation Committee” would be established chaired by Secretary Ministry of Environment. This committee would meet biannually and report the status of implementation of the policy to Pakistan Environmental Protection Council on regular basis. Thus NEP is another supporting and guiding document for SWM strategy and policy in Sindh.

### ***9.1.3 Sindh Sustainable Strategy for Development (SSSD)***

Planning and Development Department, Government of Sindh, in collaboration with IUCN - The World Conservation Union, has started the process for the development of the Sindh Sustainable Strategy for Development This strategy will provide guidance to the government planners, policy makers, civil society and private sector in promoting sustainable development in the province (Annex. - C). It would be a

useful document for the departments in order to develop their Annual Development Plans. SSSD is a collaborated effort of P&DD and IUCN Sindh, in response to the targets set out by National Conservation Strategy (NCS) made by IUCN for the federal government.

An Advisory committee was notified by the Chief Secretary, government of Sindh, on November 30, 2004, which is headed by Additional Chief Secretary Development Sindh and comprise of member that represent the line departments, civil society, and all the major stake holders in the development process. The main object is to evolve a sustainable strategy for development for next 10 years on the pattern of Sustainable Strategy documents of North West Frontier Province (NWFP) and Balochistan. This strategy would identify the problems related to environment and sustainable development through a consultative process, ascertain causes and recommend solutions to rectify them. The SSSD involves a series of consultative workshops in 22 sub-sectors of environment and sustainable development including irrigation, wildlife, forest, governance, urban management and other current pressing environmental problems being faced by Sindh. SSSD is premised on three principles: -

1. Participation of stakeholders in its formulation and implementation
2. Human and institutional capacity building of stakeholders
3. Mainstreaming environmental considerations into planning and development processes

The consultative workshop on the Urban Environment follows a Status paper on “The Urban Environment of Sindh” which provides an overview of the state of environment in the urban areas of Sindh including solid waste management (Annex - D). The consultative process of the stakeholders is going on and would become the part of the documented Strategy for Sustainable Development taking into account the problem identification, issues and trends, lessons learnt, options for the future as well as recommendations, to be finalized by the stakeholders. Thus the document would carry broad ownership and

provide a guideline for environmental management including SWM in Sindh.

## **10 Current Policy Initiatives**

The initiatives taken by the Provincial government for TMAs and the City District Government of Karachi (CDGK) are in the form of strategies through consultative process leading towards effective policy decisions for handling solid waste in Sindh.

The objectives laid down by the government of Pakistan are the guiding principles in the policy making process of SWM in Sindh. Since the policy is a thorough process, a considerable impact and inspiration of which has trickled down from the guidelines provided by MTFD and National Environmental Policy, which promotes the principles of SWM strategies through modern practices and community participation.

The government of Sindh probed into the options and figured out that in Karachi, currently, three major policy interventions have been presented before Sindh government for the improvement of solid waste management system which are:-

1. Privatization of lifting and transportation of garbage
2. Development of infrastructure - Garbage transfer stations and land fill sites
3. Filling of the resource gap

### ***10.1 Policy Decisions***

The Government of Sindh in order to develop the Interim policy framework on solid waste management in Sindh has made the following decisions (Annex. - J): -

1. Shift the recycling industry to the final disposal site - CDGK is in the process of identifying locations for establishment of landfill sites and shifting of recycling industry to the landfill sites.

2. CDGK is also assessing the feasibility of low cost housing at landfill sites for scavengers and scavenging industry.
3. Health Department would conduct a survey for identification of health care units in the city who produce medical waste, to bring them under the ambit of EPA guidelines.
4. Outsourcing of garbage collection and transportation - ACS (LG) was directed by Governor Sindh to convene a meeting of all Nazims of TMAs in Karachi and discuss the proposal of outsourcing the garbage transportation. Accordingly, a meeting was held with Nazim Karachi, Town Nazims of TMAs in Karachi and Nazims of TMAs in Hyderabad to discuss the proposal of outsourcing of garbage transportation. A committee headed by Nazim Gulberg Town was constituted to provide its recommendation within 15 days. The recommendation of the committee will be brought in the “Zila Mushavirat Committee” meeting for integration of the proposal of outsourcing of solid waste lifting and transportation. A draft plan has already been circulated to the Mushavirat Committee of CDGK and will be given its final shape soon. So far, three TMAs in Karachi, namely Gulshan-e-Iqbal, Shah Faisal and Gulberg Town have already privatized the transportation of the solid waste, which has been a success. So far 14 TMAs have conveyed their outsourcing plans to the government. Since TMAs are lead by political leadership with an elected head called “Nazim”, the government has engaged them in dialogue and a consultative process to reach the consensus.

The most distinct aspect of these policy decisions is the participatory process which is recognized and actively adopted by Sindh government. This has produced a greater ownership and consensus and guarantees non-conflictive solutions to multi-dimensional problems related to SWM. These policy decisions are also in conformity with the guiding principles of government of Pakistan and in consonance with the future demands of the policy layout. Privatization of garbage

collection and transportation, formalizing of recycling industry, improvement of landfill sites, attempt to formulate integrated waste management plan are precisely the recommendations of federal government as well as policy decisions of the provincial government.

To bring uniformity and consistency in the policy of SWM, the success stories of SWM in Karachi would be replicated in the other urban areas of Sindh.

## ***10.2 Options Outcome Analysis for Karachi***

Some of the options, which are the outcome of policy deliberations, are analyzed in brief from a technical, financial and capacity perspective: -

### ***10.2.1 Garbage Transfer Stations (GTS)***

In order to improve the solid waste management, CDGK considers the Garbage Transfer Stations (GTS) as a viable option. The daily transportation of garbage to a distance to 30-35 kms and back through existing vehicles of less capacity is inefficient and economically unviable. CDGK considers two-stage transportation of garbage in Karachi to be more appropriate. For this purpose it is considering the establishment five GTS at various locations in Karachi. In two-stage transportation system, the existing primary vehicles will transport the garbage from primary collection points to GTS, which would be 3-4 km away. The weight and other related information would be recorded at computerized weighbridge; recyclable items (if required) collected and the remaining garbage would be compacted to reduce the volume. The compacted garbage would be transported through big volume containers having the capacity of 35-56 cubic meters. One secondary vehicle would transport the garbage equivalent to the load of 6-10 primary vehicles.

The concept clearance paper has been approved by PDWP and CDWP. Site for 5 intermediate GTS have been finalized by CDGK for which a PC-II would be submitted to the Provincial Government as the study

for the feasibility of GTS in under way and would be issued shortly. One GTS would be financed by the CDGK under Tameer-e-Karachi Program.

The concept of GTS however, has yet to address the issue of recycling industry, for which the decision has already been made for shifting to the landfill sites. The disposal of compacted garbage material at the landfill site would make it inconvenient for the scavengers to explore for the recyclable material and in an attempt to do so, would again dismantle the SW and spread over a large area. Thus the benefits of GTS cannot be maximized.

### ***10.2.2 Improvement of Current Landfill Sites***

Currently, the only two functional landfill sites for Karachi are at Gondpass and Jam Chakro, having an area of about 500 acres each. These landfill sites have inadequate basic infrastructure. A project to establish the infrastructure including access road, civil works and fencing has been approved by CDGK as well as PDWP. The cost of the project would be around 36.096 million (Annex. - K). Planning and Development Department has asked CDGK to carry out the project's EIA after which the project will start soon.

### ***10.2.3 Waste to Energy Option***

The option of waste to energy has also been explored by the CDGK and had developed and initiated a project titled Waste to Energy on BOT basis. Out of 9 companies that pre-qualified for the project, three submitted bids, which were evaluated (Annex. - L). The establishment of Waste to Energy plant is a mega project and as per rough estimates a power plant having a capacity of 100 MW would cost around 6-9 billion rupees and would consume around 2000 tons of solid waste. In order to consume all the waste generated in Karachi a plant with size up to 500 MW is required which would cost 5 times more than a 100 MW plant. The CDGK is neither financially nor technically sound to run

such project efficiently and return loans on this project. According to CDGK, the power plants in China, USA and Japan consume municipal solid waste as partial fuel and get a permanent subsidy from the local municipal authorities for burning/utilizing the solid waste in the plants ranging from 30 dollars per ton in USA to 10 Dollars in China. The bids submitted by three pre-qualified companies to the CDGK for the establishment of a power plant fueled by solid waste clearly put the condition that all the solid waste required for the plant shall be supplied to them at the doorsteps of the plant without any cost. In addition, they also asked for a tipping fee of 5 Pound Sterling per ton for disposing / burning the Municipal Solid Waste. Moreover, the SW of Karachi has a value of 6000 Btu/lb, which is much below the international standard of Solid Waste, which is around 10,000 Btu/lb. The low heat value of the municipal solid waste has a major impact on the economic viability of incineration projects in Karachi. Thus CDGK has decided not to establish the power plant fueled by municipal solid waste from its own resources or through loans as it involved heavy capital cost.

## **11. DSSP and SWM**

To assist the government in formulation of SWM policy, the project support unit of Sindh Devolved Social Services Program held a meeting with DCO Karachi on 19-04-05 and developed an understanding that DSSP would continue to assist the CDGK for the improvement of the solid waste management system in Karachi (Annex. - M). In this regard, a DSSP sponsored seminar will be held encompassing all the stakeholders to evolve an integrated solid waste management strategy for Karachi through consultative process. The out come of the seminar would identify the policy gaps, highlight the socio-economic aspects of the policy, view the short, medium and long-term requirements of the TMAs and City district and attempt to cultivate consensus with the

stakeholders for a policy holding broader ownership. SDSSP would also provide technical assistance through TA to strengthen various components of solid waste management for TMAs. Mr. Fazal Memon, DO (E&M) and Mr. Khalid Javed, DO (SWM), will draft detailed terms of Reference (TOR) of the proposed workshop in consultation with DSSP. DCO Karachi also expressed his keen interest in ADB sponsored TA for the improvement of SWM in Karachi, in the form of grant on soft terms.

PSU, DSSP is coordinating with TMAs in Karachi by contributing towards filling their resource gap at specially at the collection and transportation stages. The TMAs prepared their Annual Sector Plans in the light of the guidelines provided by PSU for such preparation, by incorporating the situation analysis, current fiscal status of the TMAs, state of participatory planning and needs of the TMAs.

In Karachi, the releases of DSSP have mainly being focused on improvement of Solid waste. One of the TMA, New Karachi town has already disbursed the DSSP funds and acquired equipments like shovels and tractors to strengthen their solid waste collection and transportation arrangement. Detail of the funds accessed by TMAs in Karachi is provides at Annexure (N).

## **12. Future Strategy**

In addition to the present policy making process, formulating the Integrated Solid Waste Management Plan for Karachi by CDGK in consultation with the stakeholders is in process.

Further complimenting assistance in the improvement of Solid Waste Management sector is expected in the form of outcome of TA on Environmental Management in Sindh. Besides this, TA for Sindh Basic Urban Services Program, has been approved on December 23, 2004.

This TA has the objective to assist Sindh Government in preparing a project to improve basic urban infrastructure and services, including SWM, in a participatory manner in selected low-income communities in urban centers in Sindh. The project's output will consist of: -

- A sectoral and institutional analysis review and data collection study.
- A participatory framework for community participation leading to the formulation of priority infrastructure and institutional arrangements.
- A feasibility study suitable for ADB financing.

Likewise the Mega City Project – I of ADB<sup>2</sup> would be initiated after a TA which will design a mega city project preparation and capacity building facility that is expected to provide a suitable assistant modality to tackle the mega city's challenges and multidimensional needs by enabling the preparation of high priority investment projects for urban infrastructure and services and assistance for necessary urban policy and institutional reforms and capacity building. The major outputs of the TA will be a list of project proposals, based on a city development framework, for:-

- Feasibility assessments of high priority infrastructure investments,
- Studies of advisory and planning nature to provide input into the proposed investments, and
- Capacity building assistance linked to an agreed agenda for further urban policy, institutional, and financial reforms.

Thus Sindh has a policy option framework for Solid Waste Management evolving through a consultative process of all the stakeholders and based on the policy principles and guidelines of federal and provincial government. NGOs and donor agencies have

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<sup>2</sup> <http://www.adb.org/Documents/Profiles/PPTA/38405012.ASP>

significant contribution towards the policy framing and the TA provided by ABD for environmental management would further modulate the process of policy formulation moving towards a long-term sustainable SWM policy for the province. The dichotomy of urban and rural TMAs provides a challenging picture and indicates the fact that different approaches have to be adopted to achieve efficiency in this sector encompassing urban and rural realities.